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SMALL ARMS WEAPON SYSTEMS (SAWS)

PART TWO: ANNEXES.

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SOURCE DATA
SMALL ARMS
WEAPONS SYSTEMS
STUDY

MAY 1966

⑪ 10 May 66

⑫ 195 p.



U. S. ARMY COMBAT DEVELOPMENTS COMMAND
EXPERIMENTATION COMMAND FORT ORD, CALIFORNIA

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SMALL ARMS WEAPON SYSTEM (SAWS)
FIELD EXPERIMENT

In Two Parts

PART TWO: ANNEXES

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**HEADQUARTERS
UNITED STATES ARMY COMBAT DEVELOPMENTS COMMAND
EXPERIMENTATION COMMAND
Fort Ord, California**

**SMALL ARMS WEAPON SYSTEMS (SAWS)
FIELD EXPERIMENT**

(CDCEC 65-4)

10 May 1966

APPROVED:

A handwritten signature in black ink, appearing to read "L. G. Cagwin". The signature is stylized with a large, looped "L" and a cursive "Cagwin".

**L. G. CAGWIN
Major General, United States Army
Commanding**

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AUTHORITY

1. Letter, CDCRE-E, HQ, USACDC, 23 February 1965, subject: US Army Combat Developments Command Experimentation Center Experiment - Small Arms Weapon Systems (SAWS)
2. Directive, US Army Combat Developments Command, 5 March 1965, subject: Army Small Arms Weapon Systems Program (SAWS)
3. Outline Plan USACDCEC Experiment 65-4, Small Arms Weapon Systems (SAWS) (U), July 1965
4. Letter, CDCRE-E, HQ, USACDC, 7 September 1965, subject: Outline Plan, Small Arms Weapon Systems (SAWS) Experiment

CORRELATION

The Small Arms Weapon Systems (SAWS) Experiment is identified as USACDC Action Control No. M3523 and supports the following:

- | | |
|-------------------------|---|
| a. Army Concept Program | Army 75 |
| b. Army Tasks | 1: High Intensity Conflict 2: Mid Intensity Conflict 3: Low Intensity Conflict Type I 4: Low Intensity Conflict Type II 7: Complementing Allied Landpower |
| c. Phase | Evaluation |
| d. Functions | Firepower |

CONTRACTUAL AGREEMENT

Scientific Support

Research Office, USACDCBC, Stanford Research Institute,
Contract No. DA 04-200-AMC-1104(X).

ACKNOWLEDGMENT

The United States Army Combat Developments Command Experimentation Command wishes to express appreciation to the United States Army Training Center, Infantry, Fort Ord, California, for its outstanding cooperation and support during the conduct of the SAWS experiment.

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Annex A

SQUAD ORGANIZATION AND OPERATIONAL POLICIES

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Annex A

SQUAD ORGANIZATION AND OPERATIONAL POLICIES

This annex describes the squad organization and presents the operational policies of the experimentation squads in tabular form.

The directive required that the fire effectiveness of candidate weapons be determined within an organizational and tactical context. It specified that this was to be done by determining the fire effectiveness of rifle and machinegun squads armed with the candidate and Soviet weapons. The same representative tactical situations were to be used while holding organization constant and using the best firing techniques for each weapon.

The squad was selected as the organizational level of the experiment because:

- 1) It is the smallest discrete tactical organization
- 2) Instrumentation and safety limitations precluded a live firing experiment on a platoon or larger unit basis
- 3) Larger units and indirect fire support weapons (for example, mortars and artillery, given the present characteristics of these weapons) were not essential within the context of the experiment to identify the best small arms weapon system
- 4) Variables introduced by the use of larger units with associated indirect fire support weapons would have introduced experimentation error great enough to obscure any differences attributable to the candidate weapons
- 5) Conduct of the experiment on the basis of rifle and machinegun squads would permit computation of platoon fire effectiveness by synthesis--this is possible because data for the component squads were obtained individually in all combat situations from the same target arrays with proper reference to time.

Selection of a two fire team (nine-man) rifle squad provided duplication of special functions that are typical of the squad, such as those of the automatic rifleman, and permitted economy of experimentation

subjects, weapons, and ammunition. As in the case of rifle squads, a two element (seven-man, two machinegun) organization for the machinegun squad was both more useful experimentally and is similar to traditional and current policies in assignment of machineguns in pairs. A conventional machinegun team size that was adequate for carrying the system weight of the heaviest candidate weapon was thereby provided.

Squad organization was held constant throughout the experiment. A valid comparison of weapon effectiveness could not have been made in the time available if weapon mixes and organizations had both varied. Within the practical limitations on variations in organization, the weapon system that was superior with a median organization would likely be the best system with any organization. A best organization might have improved the per-man effectiveness or efficiency of a particular small arms weapon system, but it would not likely have changed the ordering of the weapons.

The directive specified that the best organization for the superior weapon system be determined under Project IRUS.

In all the situations, experimentation subjects wore or carried helmets, pistol belts, first-aid cases and dressings, full canteens, ammunition pouches, combat packs with suspenders, entrenching tools, bayonets, and magazines or bandoleers.

Although the median squad organization applied to all squad weapon mixes does not affect the rank ordering of weapons, such a rank ordering can be sensitive to the firing techniques employed. Thus, for each weapon in each situation, it was necessary to identify the best firing techniques applicable. Unfortunately many intrarelated factors had to be considered. The most important elements were:

- 1) Burst size (length)
- 2) Ammunition mix
- 3) Sight settings
- 4) Position assumed by firer
- 5) Support for weapon (for example, bipod)

These elements, which are in a sense part of the techniques of fire and basic loads per weapon, have been termed "operational policies." The operational policies as they applied to each weapon and each situation in the field experiment are tabulated in Tables A-1 through A-20.

The operational policies generally originated in doctrine or approved techniques of fire when available. For the Colt, Stoner, and particularly

the Soviet weapons, such required information often was either not available or of questioned validity. Exploratory firing was conducted with individual firers, pairs of soldiers, and up to full squads to collect enough data for a decision on alternate firing techniques; for example, a choice between a two or three-round burst. It was often necessary to make a compromise among different elements. For example, with the 5.56mm weapons, more near misses (gross measure of suppression) can be scored with a four-round burst than with a two-round burst in a given situation. At the same time, the larger burst size and attendant increase in near misses are attained at the expense of higher ammunition consumption. Not only were tradeoffs considered in each situation, but when possible, like type weapons (the Colt and Stoner weapons) were employed under the same operational policies. The magnitude of the exploratory firing can be appreciated by noting the ammunition consumed. Table 5-1 shows the ammunition expended for each weapon type. Of the 2,306,940 rounds fired in the experiment, 372,342 (16 percent) were used to support exploratory firing.

As shown in Tables A-1 through A-20, each rifle squad weapon mix consisted of two parts, except as noted. The weapons in the second part (rifles, automatic rifles, or machineguns) were at automatic rifle (AR) system weights. Not shown in these tables are two additional mixes of nine M14 rifles and nine M16E1 rifles each. These mixes were formed and used to determine the learning that occurred when squads were repeatedly exposed to the same situation. Each squad fired Situation 8 three times, using the same operational policies as shown in Table A-9.

Table A-1
OPERATIONAL POLICIES RIFLE SQUAD IN LINE ASSAULT
(Situation 1, Range A)

| Squad Weapon Mix | Squads Used per Mix | Basic ^a Load (per weapon) | Ammunition Mix ^b | Burst Length | Sight Setting | Position | Support | Remarks |
|------------------|---------------------|--------------------------------------|-----------------------------|--------------|---|----------------------------|---------|---------------------------------------|
| 7 M14s | 6 | 100 | Ball | Semi-auto | Battlesight 250m zero | Marching, shoulder-pointed | N/A | M14 has no bipod |
| 2 M14s | | 296 | All tracer | | | | | |
| 7 M14E2s | 6 | 80 | Ball | 2 rd | Battlesight 250m zero | Marching, shoulder-pointed | N/A | Bipod folded back |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | | | | | |
| 7 M16E1s | 6 | 300 | Ball | 2 rd | Shortrange battlesight 250m zero ^c | Marching, shoulder-pointed | N/A | Bipod belt-carried |
| 2 M16E1s | | 751 | 1 ball to 1 tracer | | | | | |
| 7 Stoner rifles | 6 | 186 | Ball | 2 rd | Shortrange battlesight 250m zero ^c | Marching, shoulder-pointed | N/A | Bipod belt-carried |
| 2 Stoner rifles | | 546 | 1 ball to 1 tracer | | | | | |
| 7 AK47s | 5 ^d | 120 | Ball ^e | Semi-auto | Battlesight 250m zero | Marching, shoulder-pointed | N/A | AK47 has no bipod |
| 2 AK47s | | 332 | | | | | | |
| 7 M14s | 6 | 100 | Ball | Semi-auto | Battlesight 250m zero | Marching, shoulder-pointed | N/A | M14 has no bipod Bipod folded back |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | | | | | |
| 7 M16E1s | 6 | 300 | Ball | 2 rd | Shortrange battlesight 250m zero ^c | Marching, shoulder-pointed | N/A | Bipod belt-carried |
| 2 Colt ARs | | 724 | 1 ball to 1 tracer | | | | | |
| 7 Stoner rifles | 6 | 180 | Ball | 2 rd | Shortrange battlesight 250m zero ^c | Marching, shoulder-pointed | N/A | Bipod belt-carried |
| 2 Stoner rifles | | 492 | 1 ball to 1 tracer | | Battlesight 250m zero | | | |

^a To hold the weight carried by the M60 gunner to AR systems weight, while holding squad size (nine men) constant, two of the seven riflemen were used as assistant machinegunners to carry ammunition.

^b M14s and M14E2s used 20-round magazines, M16E1s, Colt automatic rifles, Stoner rifles, automatic rifles, and the AK47s used 30-round magazines. M60 machinegun used 100-round bandoleers, Stoner machinegun used 150-round bandoleers, RPD used 100-round drums.

^c The rifle sight was set with the short side of the L-type battlesight up.

^d Due to a shortage of AK47s each AK47 squad used the same nine weapons.

^e No tracer ammunition was available.

^f Carried between gunner and assistant gunner.

^g Initially, no tracer ammunition was available, however, a second series was conducted in January 1966 to compare the AK47 in automatic fire.

Table A-1 (Concluded)

**OPERATIONAL POLICIES RIFLE SQUAD IN LINE ASSAULT
(Situation 1, Range A)**

| Squad Weapon Mix | Squads Used per Mix | Basic Load (per weapon) | Ammunition Mix ^a | Burst Length | Sight Setting | Position | Support | Remarks |
|----------------------|---------------------|-------------------------|-----------------------------|--------------|---|----------------------------|---------|--------------------|
| 5 M14s | 6 | 100 | Ball | Semi-auto | Battlesight 250m zero | Marching, shoulder-pointed | N/A | M14 has no bipod |
| 2 M60 MGs | | 294 ^f | 3 ball to 1 tracer | 4 rd | Zeroed at 400m rear sight on 300m | Marching, underarm | Sling | Bipod folded back |
| 7 Stoner rifles | 6 | 180 | Ball | 2 rd | Shortrange battlesight 250m zero ^c | Marching, shoulder-pointed | N/A | Bipod belt-carried |
| 2 Stoner MGs | | 600 | 3 ball to 1 tracer | 4 rd | Zeroed at 400m battlesight 200m | Marching, underarm | Sling | |
| 7 AK47s | 5 ^b | 120 | Ball | Semi-auto | Battlesight 250m zero | Marching, shoulder-pointed | N/A | AK47 has no bipod |
| 2 RPDs | | 300 | | 4 rd | Zeroed at 300m rear sight on 300m | Marching, underarm | Sling | Bipod folded back |
| 7 M16E1s | 4 | 300 | Ball | 2 rd | Shortrange battlesight 250m zero ^f | Marching, shoulder-pointed | N/A | Bipod belt-carried |
| 2 Stoner MGs | | 600 | 3 ball to 1 tracer | 4 rd | Zeroed at 400m battlesight 200m | Marching, underarm | Sling | |
| 9 Colt ARs | 4 | 268 | Ball | Semi-auto | Shortrange battlesight 250m zero ^f | Marching, shoulder-pointed | N/A | Bipod belt-carried |
| | | | | 2 rd | | | | |
| 9 M16E1s | 4 | 300 | | Semi-auto | | | | |
| 7 AK47s ^g | 3 | 120 | Ball | 2 rd | Battlesight 250m zero | Marching, shoulder-pointed | N/A | AK47 has no bipod |
| 2 AK47s ^g | | 332 | 1 ball to 1 tracer | | | | | |
| 7 AK47s ^g | 2 | 120 | Ball | Semi-auto | | | | |
| 2 AK47s ^g | | 332 | All tracer | | | | | |

NOTES

1 Operational Policy. There were nine lanes. Squad leader was in lane five; automatic rifles, machineguns and rifles representing automatic rifles, were in lanes two and eight, from right to left. Other squad members were in the remaining lanes, right to left, in decreasing order of their marksmanship scores. Firers in lanes one through four fired on the right half of the squad sector, and five through nine on the left half of the squad sector, or directly at a target when they saw one. Most firers did not use sights in marching fire as they were instructed to point rather than to aim through the sights. However, these are the settings that were placed on the weapons.

2 M60 machinegunner assistant carried a .45 caliber pistol with hip holster and three magazines.

Table A-2
OPERATIONAL POLICIES RIFLE SQUAD AS BASE OF FIRE
SUPPORTING THE ASSAULT
(Situation 2, Range A)

| Squad Weapon Mix | Squads Used per Mix | Basic Load ^a (per weapon) | Ammunition Mix ^b | Burst Length | Sight Setting | Position | Support | Remarks |
|------------------------|------------------------------|---|--------------------------------|-----------------|---|---|-----------------------------------|-------------------|
| 7 M14s | 6 | 100 | Ball | Semi- auto | Battlesight 250m zero | Hasty fox- hole, shoulder- aimed | N/A | M14 has no bipod |
| 2 M14s | | 295 | All tracer | | | | | |
| 7 M14E2s | 6 | 30 | Ball | 2 rd | Battlesight 250m zero | Hasty fox- hole, shoulder- aimed | Bipod and hinged butt plate | |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | | | | | |
| 7 M16E1s | 6 | 300 | Ball | 2 rd | Shortrange battlesight ^c 250m zero | Hasty fox- hole, shoulder- aimed | Bipod | |
| 2 M16E1s | | 759 | 1 ball to 1 tracer | | | | | |
| 7 Stoner rifles | 6 | 150 | Ball | 2 rd | Shortrange battlesight 250m zero ^c | Hasty fox- hole, shoulder- aimed | Bipod | |
| 2 Stoner rifles | | 546 | 1 ball to 1 tracer | | | | | |
| 7 AK47s | 5 ^d | 120 | Ball ^e | Semi- auto | Battlesight 250m zero | Hasty fox- hole, shoulder- aimed | N/A | AK47 has no bipod |
| 2 AK47s | | 332 | | | | | | |
| 7 M14s | 6 | 100 | Ball | Semi- auto | Battlesight 250m zero | Hasty fox- hole, shoulder- aimed | N/A | M14 has no bipod |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | | | | | |
| 7 M16E1s | 6 | 300 | Ball | 2 rd | Shortrange battlesight ^c 250m zero | Hasty fox- hole, shoulder- aimed | Bipod | |
| 2 Colt ARs | | 724 | 1 ball to 1 tracer | | | | | |

^a To hold the weight carried by the M60 gunner to AR systems weight, while holding squad size (nine men) constant, two of the seven riflemen were used as assistant machinegunners to carry ammunition.

^b M14s and M14E2s used 20-round magazines, M16E1s, Colt automatic rifles, Stoner rifles, automatic rifles, and the AK47s used 30-round magazines. M60 machinegun used 100-round bandoleers, Stoner machinegun used 150-round bandoleers, RPD used 100-round drums.

^c The rifle sight was set with the short side of the L-type battlesight up.

^d Due to a shortage of AK47s, each AK47 squad used the same nine weapons.

^e No tracer ammunition was available.

^f Carried between gunner and assistant gunner.

Table A-2 (Concluded)
OPERATIONAL POLICIES RIFLE SQUAD AS BASE OF FIRE
SUPPORTING THE ASSAULT
(Situation 2, Range A)

| Squad Weapon Mix | Squads Used per Mix | Basic Load (per weapon) | Ammunition Mix ^a | Burst Length | Sight Setting | Position | Support | Remarks |
|------------------|---------------------|-------------------------|-----------------------------|--------------|---|--------------------------------|-----------------------------|-------------------|
| 7 Stoner rifles | 6 | 180 | Ball | 2 rd | Shortrange battlesight 250m zero ^c | Hasty fox-hole, shoulder-aimed | Bipod | |
| 2 Stoner ARs | | 492 | 1 ball to 1 tracer | | Zeroed at 250m rear sight on 300m | | | |
| 5 M14s | 6 | 100 | Ball | Semi-auto | Battlesight 250m zero | Hasty fox-hole, shoulder-aimed | N/A | M14 has no bipod |
| 2 M60 MGs | | 294 ^d | 4 ball to 1 tracer | 6 rd | Zeroed at 400m rear sight on 300m | | Bipod and hinged butt plate | |
| 7 Stoner rifles | 6 | 180 | Ball | 2 rd | Shortrange battlesight 250m zero ^c | Hasty fox-hole, shoulder-aimed | Bipod | |
| 2 Stoner MGs | | 600 | 4 ball to 1 tracer | 6 rd | Zeroed at 400m battlesight 200m | | | |
| 7 AK47s | 5 ^e | 120 | Ball | Semi-auto | Battlesight 250m zero | Hasty fox-hole, shoulder-aimed | N/A | AK47 has no bipod |
| 2 RPDs | | 300 | | 6 rd | Zeroed at 300m rear sight on 300m | | Bipod | |
| 7 M16E1s | 4 | 300 | Ball | 2 rd | Shortrange battlesight 250m zero ^c | Hasty fox-hole, shoulder-aimed | Bipod | |
| 2 Stoner MGs | | 600 | 4 ball to 1 tracer | 6 rd | Zeroed at 400m battlesight 200m | | | |
| 9 Colt ARs | 4 | 268 | Ball | Semi-auto | Shortrange battlesight 250m zero ^c | Hasty fox-hole, shoulder-aimed | Bipod | |
| | | | | 2 rd | | | | |
| | | | | Semi-auto | | | | |
| 9 M16E1s | 4 | 300 | | 2 rd | | | | |

NOTES

- 1 Operational Policy. There were nine positions. Squad leader was in position five; automatic rifles, machineguns and rifles representing automatic rifles, were in positions three and seven (from right to left). Other squad members were in the remaining positions (right to left) in decreasing order of their marksmanship scores. Riflemen in positions one through four fired on the right half of the target arrays, and five through nine on the left half of the target arrays, with assigned fire priorities first to targets of opportunity and second to an even distribution of fire. The assigned fire priorities of ARs and machineguns were first priority to automatic weapons targets, second to other targets of opportunity, and third to an even distribution of fire. The two ARs or machineguns traversed from opposite flanks of the array to its center. MGs changed barrels after firing 1 minute 45 seconds on the left target array. The time required to change barrels was administrative; however, it was recorded. The total firing time for each array was two minutes. The M60 machinegunner assistant was permitted to assist the gunner in target acquisition.
- 2 M60 machinegunner assistant carried a .45 caliber pistol with hip holster and three magazines.

Table A-3
OPERATIONAL POLICIES MACHINEGUN SQUAD
IN FIRE SUPPORT OF THE ASSAULT
(Situation 3, Range A)

| Squad Weapon Mix | Squad Used per Mix | Basic Load ^a (per weapon) | Ammunition Mix | Burst Length | Sight Setting | Position | Support | Remarks |
|--------------------------|-----------------------------|---|-----------------------|-----------------|---|---|---|---------|
| 2 M60 bipod MGs | 6 | 1000 | 4 ball to 1 tracer | 6 rd | Zeroed at 400m rear sight on 300m | Hasty fox- hole, shoulder- aimed | Bipod | |
| 2 M60 tripod MGs | 6 | 800 | 4 ball to 1 tracer | 6 rd | Zeroed at 400m rear sight on 300m | Hasty fox- hole, shoulder- aimed | Tripod using traversing and elevating mechanism ^b | |
| 2 Stoner bipod MGs | 6 | 2850 | 4 ball to 1 tracer | 6 rd | Zeroed at 400m battlesight 200m | Hasty fox- hole, shoulder- aimed | Bipod | |
| 2 Stoner tri- pod MGs | 6 | 2298 | 4 ball to 1 tracer | 6 rd | Zeroed at 400m battlesight 200m | Hasty fox- hole, shoulder- aimed | Tripod using traversing and elevating mechanism ^b | |
| 2 RPD MGs | 5 | 1000 | 4 ball to 1 tracer | 6 rd | Zeroed at 300m rear sight on 300m | Hasty fox- hole, shoulder- aimed | Bipod | |
| 2 DPM MGs | 4 | 752 | Ball ^c | 6 rd | Zeroed at 300m rear sight on 300m | Hasty fox- hole, shoulder- aimed | Bipod | |

^a M60s used 200-round ammunition boxes, Stoner machineguns used 900-round ammunition boxes; the DPM used 47-round drums; the RPD used 100-round drums.

^b Gunner wore glove on left hand while using traversing and elevating mechanism.

^c Initially, no tracer ammunition was available, however, due to a high rate of malfunctions with the ammunition and drums, this mix was fired again.

NOTES

1 Operational Policy. Assigned fire priorities were first to automatic weapons targets, second to other targets of opportunity, and third to an even distribution of fire. The two machineguns traversed from opposite flanks of the target array to its center. Barrels were changed (except for the DPM) after firing for 1 minute and 45 seconds on the left target array. DPM barrel was allowed to cool before firing was resumed. The time to change barrels was administrative; however, it was recorded. Machineguns were in positions three and seven and fired for a total of two minutes on each target array.

2 Each machinegunner assistant and ammunition bearer carried a .45 caliber pistol with hip holster and three magazines.

Table A-4
OPERATIONAL POLICIES RIFLE SQUAD
IN APPROACH TO CONTACT
(Situation 4, Range B)

| Squad Weapon Mix | Squads Used per Mix | Basic Load (per weapon) | Ammunition Mix ^a | Burst Length | Sight Setting | Position | Support | Remarks |
|------------------|---------------------|-------------------------|-----------------------------|--------------|---|------------|---------|---------------------------------------|
| 7 M14s | 6 | 100 | Ball | Semi-auto | Battlesight 250m zero | Quick-fire | N/A | M14 has no bipod |
| 2 M14s | | 295 | All tracer | | | | | |
| 7 M14E2s | 6 | 80 | Ball | 2 rd | Battlesight 250m zero | Quick-fire | N/A | Bipod folded back |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | | | | | |
| 7 M16E1s | 6 | 300 | Ball | 2 rd | Shortrange battlesight 250m zero ^c | Quick-fire | N/A | Bipod belt-carried |
| 2 M16E1s | | 759 | 1 ball to 1 tracer | | | | | |
| 7 Stoner rifles | 6 | 180 | Ball | 2 rd | Shortrange battlesight 250m zero ^c | Quick-fire | N/A | Bipod belt-carried |
| 2 Stoner rifles | | 546 | 1 ball to 1 tracer | | | | | |
| 7 AK47s | 5 ^d | 120 | Ball ^e | Semi-auto | Battlesight 250m zero | Quick-fire | N/A | AK47 has no bipod |
| 2 AK47s | | 332 | | | | | | |
| 7 M14s | 6 | 100 | Ball | Semi-auto | Battlesight 250m zero | Quick-fire | N/A | M14 has no bipod Bipod folded back |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | | | | | |
| 7 M16E1s | 6 | 300 | Ball | 2 rd | Shortrange battlesight 250m zero ^c | Quick-fire | N/A | Bipod belt-carried |
| 2 Colt ARs | | 724 | 1 ball to 1 tracer | | | | | |
| 7 Stoner ARs | 6 | 180 | Ball | 2 rd | Shortrange battlesight 250m zero ^c | Quick-fire | N/A | Bipod belt-carried |
| 2 Stoner ARs | | 492 | 1 ball to 1 tracer | | Battlesight 250m zero | | | |
| 5 M14s | 6 | 100 | Ball | Semi-auto | Battlesight 250m zero | Quick-fire | N/A | M14 has no bipod |
| 2 M60 MGs | | 294 ^f | 4 ball to 1 tracer | 6 rd | Zeroed at 400m rear sight on 300m | Underarm | Sling | Bipod down |

^a To keep the weight carried by the M60 gunner at AR systems weight, while keeping squad size (nine men) constant, two of the seven riflemen were used as assistant mach/negunners to carry ammunition.

^b M14s and M14E2s used 20-round magazines, M16E1s, Colt automatic rifles, Stoner rifles, automatic rifles, and the AK47s used 30-round magazines. M60 machinegun used 160-round bandoleers, Stoner machinegun used 150-round bandoleers, RPD used 100-round drums.

^c The rifle sight was set with the short side of the L-type battlesight up.

^d Due to a shortage of AK47s, each AK47 squad used the same nine weapons.

^e No tracer ammunition was available.

^f Carried between gunner and assistant gunner.

^g Initially, no tracer ammunition was available; however, a second series was conducted in January 1966 to evaluate the AK47 in automatic fire.

Table A-4 (Concluded)
**OPERATIONAL POLICIES RIFLE SQUAD
 IN APPROACH TO CONTACT**
 (Situation 4, Range B)

| Squad Weapon Mix | Squads Used per Mix | Basic Load ^a (per weapon) | Ammunition Mix ^b | Burst Length | Sight Setting | Position | Support | Remarks | | | | |
|----------------------|---------------------|--------------------------------------|-----------------------------|--------------|---|------------|---------|--------------------|--|--|--|--|
| 7 Stoner rifles | 6 | 180 | Ball | 2 rd | Shortrange battlesight 250m zero ^c | Quick-fire | N/A | Bipod belt-carried | | | | |
| 2 Stoner MGs | | 600 | 4 ball to 1 tracer | 6 rd | Zeroed at 400m battlesight 200m | Underarm | Sling | Bipod down | | | | |
| 7 AK47s | 5 ^d | 120 | Ball | Semi-auto | Battlesight 250m zero | Quick-fire | N/A | AK47 has no bipod | | | | |
| 2 RPDs | | 300 | | 6 rd | Zeroed at 300m rear sight on 300m | Underarm | Sling | Bipod down | | | | |
| 7 M16E1s | 4 | 300 | Ball | 2 rd | Shortrange battlesight 250m zero ^c | Quick-fire | N/A | Bipod belt-carried | | | | |
| 2 Stoner MGs | | 600 | 4 ball to 1 tracer | 6 rd | Zeroed at 400m battlesight 200m | Underarm | Sling | Bipod down | | | | |
| 9 Colt ARs | 4 | 268 | Ball | Semi-auto | Shortrange battlesight 250m zero ^c | Quick-fire | N/A | Bipod belt-carried | | | | |
| | | | | 2 rd | | | | | | | | |
| 9 M16E1s | 4 | 300 | | Semi-auto | | | | | | | | |
| | | | | 2 rd | | | | | | | | |
| 7 AK47s ^c | 3 | 120 | Ball | 2 rd | Battlesight 250m zero | Quick-fire | N/A | AK47 has no bipod | | | | |
| 2 AK47s ^c | | 332 | 1 ball to 1 tracer | | | | | | | | | |
| 7 AK47s ^c | 2 | 120 | Ball | Semi-auto | | | | | | | | |
| 2 AK47s ^c | | 332 | All tracer | | | | | | | | | |

NOTES

- 1 Operational Policy. There were nine lanes. Squad leader was in lane five; automatic rifles, machineguns and rifles representing automatic rifles, were in lanes three and seven (from right to left). Other squad members were in the remaining lanes (right to left) in decreasing order of their marksmanship scores. The firers were instructed that they could either point or aim, so long as the weapon butt was in the shoulder. Target exposure times, however, were deliberately short to cause the men to point. Firers engaged targets as they saw them.
- 2 M60 machinegunner assistant carried a .45 caliber pistol with hip holster and three magazines.

Table A-5
OPERATIONAL POLICIES RIFLE SQUAD AS BASE OF FIRE
SUPPORTING THE ADVANCE
(Situation 5, Range B)

| Squad Weapon Mix ^a | Squads Used per Mix | Basic Load (per 1 weapon) | Ammunition Mix ^b | Burst Length | Sight Setting | Position | Support | Remarks |
|-------------------------------|---------------------|---------------------------|-----------------------------|--------------|---|-----------------------|---------|-------------------|
| 7 M14s | 6 | 100 | Ball | Semi-auto | Battlesight 250m zero | Prone, shoulder-aimed | N/A | M14 has no bipod |
| 2 M14s | | 295 | All tracer | | | | | |
| 7 M14E2s | 6 | 80 | Ball | Semi-auto | Battlesight 250m zero | Prone, shoulder-aimed | Bipod | |
| 2 M14E2s | | 260 | All tracer | | | | | |
| 7 M16E1s | 6 | 300 | Ball | Semi-auto | Longrange battlesight 250m zero ^c | Prone, shoulder-aimed | Bipod | |
| 2 M16E1s | | 759 | All tracer | | | | | |
| 7 Stoner rifles | 6 | 180 | Ball | Semi-auto | Longrange battlesight 250m zero ^c | Prone, shoulder-aimed | Bipod | |
| 2 Stoner rifles | | 546 | All tracer | | | | | |
| 7 AK47s | 5 ^d | 120 | Ball ^e | Semi-auto | Zeroed at 250m rear sight on 400m and 500m respectively for target arrays X and Y | Prone, shoulder-aimed | N/A | AK47 has no bipod |
| 2 AK47s | | 332 | | | | | | |
| 7 M14s | 6 | 100 | Ball | Semi-auto | Battlesight 250m zero | Prone, shoulder-aimed | N/A | M14 has no bipod |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | 2 rd | | | | |
| 7 M16E1s | 6 | 300 | Ball | Semi-auto | Longrange battlesight 250m zero ^c | Prone, shoulder-aimed | Bipod | |
| 2 Colt ARs | | 724 | 1 ball to 1 tracer | 2 rd | | | | |
| 7 Stoner rifles | 6 | 180 | Ball | Semi-auto | Longrange battlesight 250m zero ^c | Prone, shoulder-aimed | Bipod | |
| 2 Stoner ARs | | 492 | 1 ball to 1 tracer | 2 rd | Zeroed at 250m rear sight on 300m and 400m respectively for target arrays X and Y | | | |

^a The machinegun squads, as listed in Table A-6, also fired this situation.

^b To keep the weight carried by the M60 gunner to AR systems weight, while keeping squad size constant (nine men), two of the seven riflemen were used as assistant machinegunners to carry ammunition.

^c A separate basic load was issued for firing on each target array.

^d M14 and M14E2 used 20-round magazines, M16E1, Colt automatic rifles, Stoner rifle, Stoner automatic rifle, and AK47 used 30-round magazines. M60 machinegun used 100-round bandoleers; Stoner machinegun used 150-round bandoleers; RPD used 100-round drums.

^e The rifle sight was set with the long side of the L-type battlesight up.

^f Due to a shortage of AK47s, each AK47 squad used the same nine weapons.

^g No tracer ammunition was available.

^h Carried between gunner and assistant gunner.

Table A-5 (Concluded)
**OPERATIONAL POLICIES RIFLE SQUAD AS BASE OF FIRE
SUPPORTING THE ADVANCE**
(Situation 5, Range B)

| Squad Weapon Mix ^a | Squads Used per Mix | Basic Load (per weapon) | Ammunition Mix ^a | Burst Length | Sight Setting | Position | Support | Remarks |
|-------------------------------------|------------------------------|----------------------------------|--------------------------------|-----------------|---|------------------------------|---------|----------------------|
| 5 M14s | 6 | 100 | Ball | Semi- auto | Battlesight 250m zero | Prone, shoulder- aimed | N/A | M14 has no bipod |
| 2 M60 MGs | | 294 ^b | 1 ball 1 tracer | 2 rd | Zeroed at 400m rear sight on 400m | | Bipod | |
| 7 Stoner rifles | 6 | 180 | Ball | Semi- auto | Longrange battlesight 250m zero ^c | Prone, shoulder- aimed | Bipod | |
| 2 Stoner MGs | | 600 | 1 ball to 1 tracer | 2 rd | Zeroed at 400m battlesight 200m | | | |
| 7 AK47s | 5 ^f | 120 | Ball | Semi- auto | Zeroed at 250m rear sight on 400m and 500m respectively for target arrays X and Y | Prone, shoulder- aimed | N/A | AK47 has no bipod |
| 2 RPDs | | 300 | | 2 rd | Zeroed at 300m rear sight on 400m and 500m respectively for target arrays X and Y | | Bipod | |
| 7 M16E1s | 4 | 300 | Ball | Semi- auto | Longrange battlesight 250m zero ^c | Prone, shoulder- aimed | Bipod | |
| 2 Stoner MGs | | 600 | 1 ball to 1 tracer | 2 rd | Zeroed at 400m battlesight 200m | | | |
| 9 Colt ARs | 4 | 268 | Ball | Semi- auto | Longrange battlesight 250m zero ^c | Prone, shoulder- aimed | Bipod | |
| | | | | 2 rd | | | | |
| 9 M16E1s | 4 | 300 | | Semi- auto | | | | |
| | | | | 2 rd | | | | |

NOTES

- 1 Operational Policy. There were nine positions. Squad leader was in position five; automatic rifles, machineguns and rifles representing automatic rifles, were in positions three and seven (from right to left). Other squad members were in the remaining positions (right to left), in decreasing order of their marksmanship scores. Riflemen in positions one through four fired on the right half of the target arrays and five through nine on the left half of the target arrays with assigned fire priorities first to targets of opportunity and second to an even distribution of fire. The assigned fire priorities of ARs and machineguns were first priority to automatic weapons targets, second to other targets of opportunity, and third to an even distribution of fire. The two ARs or machineguns traversed from opposite flanks of the array to its center. After firing for two minutes on target array X, the squad's MGs changed barrels. The time required to change barrels was administrative; however, it was recorded. The squad then fired for two minutes on target array Y. The M60 machinegunner assistant was permitted to assist the gunner in target acquisition.
- 2 M60 machinegunner assistant carried a .45 caliber pistol with hip holster and three magazines.

Table A-6
OPERATIONAL POLICIES MACHINEGUN SQUAD
IN FIRE SUPPORT OF THE ADVANCE
(Situation 6, Range B)

| Squad Weapon Mix | Squads Used per Mix | Basic Load ^a (per weapon) | Ammunition Mix ^b | Burst Length | Sight Setting | Position | Support | Remarks |
|----------------------|---------------------|--------------------------------------|-----------------------------|--------------|--|-----------------------|-------------------------------|----------|
| 2 M60 bi-pod MGs | 6 | 1000 | 4 ball to 1 tracer | 6 rd | Zeroed at 400m rear sight on 400m for target array Z and 600m for target arrays X and Y | Prone, shoulder-aimed | Bi-pod with hinged butt plate | |
| 2 M60 tri-pod MGs | 6 | 800 | 4 ball to 1 tracer | 6 rd | Zeroed at 400m rear sight on 400m for target array Z and 600m for target arrays X and Y | Prone, shoulder-aimed | Tripod with hinged butt plate | Free gun |
| 2 Stoner bi-pod MGs | 6 | 2850 | 4 ball to 1 tracer | 6 rd | Zeroed at 400m rear sight on 400m for target array Z and 600m for target arrays X and Y | Prone, shoulder-aimed | Bi-pod | |
| 2 Stoner tri-pod MGs | 6 | 2298 | 4 ball to 1 tracer | 6 rd | Zeroed at 400m rear sight on 400m for target array Z and 600m for target arrays X and Y | Prone, shoulder-aimed | Tripod | Free gun |
| 2 RPD MGs | 5 | 800 | 4 ball to 1 tracer | 6 rd | Zeroed at 300m rear sight on 600m, 700m, and 400m respectively for target arrays X, Y, and Z | Prone, shoulder-aimed | Bi-pod | |
| 2 DPM MGs | 4 | 752 | Ball | 6 rd | Zeroed at 300m rear sight on 600m for X and Y target arrays and 400m for Z | Prone, shoulder-aimed | Bi-pod | |

^a A separate basic load was issued for firing on each target array.

^b M60 used 200-round ammunition boxes, Stoner machineguns used 900-round ammunition boxes; DPM used 47-round drums, the RPD used 100-round drums.

NOTES

- 1 Operational Policy. Assigned fire priorities were first to automatic weapons targets, second to other targets of opportunity, and third to an even distribution of fire. The two machineguns traversed from opposite flanks of the target array to its center. The squad fired for two minutes each on target arrays Z, X and Y, respectively. Barrels were changed (except for the DPM) after firing on target arrays Z and X. DPM barrel was allowed to cool before firing on the next array. The time to change barrels was administrative; however, it was recorded.
- 2 Each machinegunner assistant and ammunition bearer carried a .45 caliber pistol with hip holster and three magazines.

Table A-7
OPERATIONAL POLICIES RIFLE SQUAD IN DEFENSE
AGAINST ATTACK (SERIES ONE)
(Situation 7, Range C)

| Squad Weapon Mix | Squads Used per Mix | Basic Load (per weapon) | Ammunition Mix ^a | Burst Length | Sight Setting | Position | Support | Remarks |
|------------------|---------------------|-------------------------|-----------------------------|--------------|---|--------------------------------|---------|--------------------|
| 7 M14s | 6 | 100 | Ball | Semi-auto | Battlesight 250m zero | Hasty fox-hole, shoulder-aimed | N/A | M14 has no bipod |
| 2 M14s | | 295 | All tracer | | | | | |
| 7 M14E2s | 6 | 80 | Ball | 2 rd | Battlesight 250m zero | Hasty fox-hole, shoulder-aimed | Bipod | |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | | | | | |
| 7 M16E1s | 6 | 300 | Ball | 2 rd | Shortrange battlesight 250m zero ^c | Hasty fox-hole, shoulder-aimed | N/A | Bipod belt-carried |
| 2 M16E1s | | 759 | 1 ball to 1 tracer | | | | | |
| 7 Stoner rifles | 6 | 180 | Ball | 2 rd | Shortrange battlesight 250m zero ^c | Hasty fox-hole, shoulder-aimed | N/A | Bipod belt-carried |
| 2 Stoner rifles | | 546 | 1 ball to 1 tracer | | | | | |
| 7 AK47s | 5 ^b | 120 | Ball ^d | 2 rd | Battlesight 250m zero | Hasty fox-hole, shoulder-aimed | N/A | AK47 has no bipod |
| 2 AK47s | | 332 | | | | | | |
| 7 M14s | 6 | 100 | Ball | Semi-auto | Battlesight 250m zero | Hasty fox-hole, shoulder-aimed | N/A | M14 has no bipod |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | 2 rd | | | Bipod | |
| 7 M16E1s | 6 | 300 | Ball | 2 rd | Shortrange battlesight 250m zero ^c | Hasty fox-hole, shoulder-aimed | N/A | Bipod belt-carried |
| 2 Colt ARs | | 724 | 1 ball to 1 tracer | | | | Bipod | |

^a To hold the weight carried by the M60 gunner to AR systems weight, while holding squad size (nine men) constant, two of the seven riflemen were used as assistant machinegunners to carry ammunition.

^b M14s and M14E2s used 20-round magazines; M16E1s, Colt Automatic rifles, Stoner rifles, automatic rifles, and the AK47s used 30-round magazines. M60 machinegun used 100-round bandoleers, Stoner machinegun used 150-round bandoleers; RPD used 100-round drums.

^c The rifle sight was set with the short side of the L-type battlesight up.

^d Due to a shortage of AK47s, each AK47 squad used the same nine weapons.

^e No tracer ammunition was available.

^f Carried between gunner and assistant gunner.

Table A-7 (Concluded)

**OPERATIONAL POLICIES RIFLE SQUAD IN DEFENSE
AGAINST ATTACK (SERIES ONE)
(Situation 7, Range C)**

| Squad Weapon Mix | Squads Used per Mix | Basic Load ^A (per weapon) | Ammunition Mix ^B | Burst Length | Sight Setting | Position | Support | Remarks |
|------------------|---------------------|--------------------------------------|-----------------------------|--------------|---|--------------------------------|---------|--------------------|
| 7 Stoner rifles | 6 | 180 | Ball | 2 rd | Shortrange battlesight 250m zero ^C | Hasty fox-hole, shoulder-aimed | N/A | Bipod belt-carried |
| 2 Stoner ARs | | 492 | 1 ball to 1 tracer | | Battlesight 250m zero | | Bipod | |
| 5 M14s | 6 | 100 | Ball | Semi-auto | Battlesight 250m zero | Hasty fox-hole, shoulder-aimed | N/A | M14 has no bipod |
| 2 M60 MGs | | 294 | 1 ball to 1 tracer | | Zeroed at 400m rear sight on 300m | | Bipod | |
| 7 Stoner rifles | 6 | 180 | Ball | 2 rd | Shortrange battlesight 250m zero ^C | Hasty fox-hole, shoulder-aimed | N/A | Bipod belt-carried |
| 2 Stoner MGs | | 600 | 1 ball to 1 tracer | | Zeroed at 400m battlesight 200m | | Bipod | |
| 7 AK47s | 5 ^D | 120 | Ball | 2 rd | Battlesight 250m zero | Hasty fox-hole, shoulder-aimed | N/A | AK47 has no bipod |
| 2 RPDs | | 300 | 1 ball to 1 tracer | | Zeroed at 300m rear sight on 300m | | Bipod | |
| 7 M16E1s | 4 | 300 | Ball | 2 rd | Shortrange battlesight 250m zero ^C | Hasty fox-hole, shoulder-aimed | N/A | Bipod belt-carried |
| 2 Stoner MGs | | 600 | 1 ball to 1 tracer | | Zeroed at 400m battlesight 200m | | Bipod | |
| 9 Colt ARs | 4 | 263 | Ball | Semi-auto | Shortrange battlesight 250m zero ^C | Hasty fox-hole, shoulder-aimed | N/A | Bipod belt-carried |
| | | | | 2 rd | | | | |
| | | | | Semi-auto | | | | |
| 9 M16E1s | 4 | 300 | | 2 rd | | | | |

NOTES

- Operational Policy. There were nine positions. Squad leader was in position five, automatic rifles, machineguns and rifles representing automatic rifles were in positions four and seven (from right to left). Other squad members were in the remaining positions (right to left), in decreasing order of their marksmanship scores. Firers fired at targets as they saw them. The M60 machinegunner assistant was permitted to assist the gunner in target acquisition.
- M60 machinegunner assistant carried a .45 caliber pistol with hip holster and three magazines.

Table A-8

**OPERATIONAL POLICIES RIFLE SQUAD IN DEFENSE
AGAINST ATTACK (SERIES TWO)
(Situation 7, Range C)**

| Squad Weapon Mix | Squads Used per Mix ^a | Basic Load ^b (per weapon) | Ammunition Mix ^c | Burst Length | Sight Setting | Position | Support | Remarks |
|------------------------|---|---|--------------------------------|-----------------|---|---|---------|--------------------|
| 7 M14s | (3) | 100 | Ball | Semi- auto | Battlesight 250m zero | Hasty fox- hole, shoulder- aimed, prone | N/A | M14 has no bipod |
| 2 M14s | | 295 | All tracer | | | | | |
| 7 M14s | | 100 | Ball | 2 rd | | | | |
| 2 M14s | | 295 | 1 ball to 1 tracer | | | | | |
| 7 M14s | (3) | 100 | Ball | Semi- auto | Battlesight 250m zero | Hasty fox- hole, shoulder- aimed, prone | N/A | M14 has no bipod |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | | | | 2 rd | Bipod |
| 7 M14s | | 100 | Ball | 2 rd | | | N/A | M14 has no bipod |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | | | | Bipod | |
| 7 M16E1s | (3) | 300 | Ball | Semi- auto | Shortrange battlesight 250m zero ^d | Hasty fox- hole, shoulder- aimed, prone | N/A | Bipod belt-carried |
| 2 M16E1s | | 759 | All tracer | | | | | |
| 7 M16E1s | | 300 | Ball | 2 rd | | | | |
| 2 M16E1s | | 759 | 1 ball to 1 tracer | | | | | |
| 7 M16E1s | (3) | 300 | Ball | Semi- auto | Shortrange battlesight 250m zero ^d | Hasty fox- hole, shoulder- aimed, prone | N/A | Bipod belt-carried |
| 2 Colt ARs | | 724 | 1 ball to 1 tracer | | | | 2 rd | Bipod |
| 7 M16E1s | | 300 | Ball | 2 rd | | | N/A | Bipod belt-carried |
| 2 Colt ARs | | 724 | 1 ball to 1 tracer | | | | Bipod | |
| 7 Stoner rifles | (3) | 160 | Ball | Semi- auto | Shortrange battlesight 250m zero ^d | Hasty fox- hole, shoulder- aimed, prone | N/A | Bipod belt-carried |
| 2 Stoner rifles | | 544 | All tracer | | | | | |
| 7 Stoner rifles | | 160 | Ball | 2 rd | | | | |
| 2 Stoner rifles | | 544 | 1 ball to 1 tracer | | | | | |

^a Three of the squads fired semiautomatic, the other three squads fired automatic, except for the AK47 mix where three and two were used

^b To keep the weight carried by the M60 gunner to AR systems weight, while keeping squad size (nine men) constant two of the seven riflemen were used as assistant machinegunners to carry ammunition

^c M14s and M14E2s used 20-round magazines, M16E1s Colt automatic rifles Stoner rifles, automatic rifles and the AK47s used 30-round magazines. M60 machinegun used 100-round bandoleers, Stoner machinegun used 150-round bandoleers

^d The rifle sight was set with the short side of the L-type battlesight up

^e Carried between gunner and assistant gunner

^f Due to a shortage of AK47s each AK47 squad used the same nine weapons

^g No tracer ammunition was available

Table A-8 (Concluded)
**OPERATIONAL POLICIES RIFLE SQUAD IN DEFENSE
 AGAINST ATTACK (SERIES TWO)**
 (Situation 7. Range C)

| Squad Weapon Mix | Squads Used per Mix ^a | Basic Load ^b (per weapon) | Ammunition Mix ^c | Burst Length | Sight Setting | Position | Support | Remarks |
|------------------|----------------------------------|--------------------------------------|-----------------------------|--------------|--|---------------------------------------|---------|--------------------|
| 7 Stoner rifles | (3) | 150 | Ball | Semi-auto | Short range battlesight 250m zero ^d | Hasty fox-hole, shoulder-aimed, prone | N/A | Bipod belt-carried |
| 2 Stoner ARs | | 492 | 1 ball to 1 tracer | 2 rd | Battlesight 250m zero | | Bipod | |
| 7 Stoner rifles | | 150 | Ball | 2 rd | Short range battlesight 250m zero ^d | | N/A | Bipod belt-carried |
| 2 Stoner ARs | | 492 | 1 ball to 1 tracer | | Battlesight 250m zero | | Bipod | |
| 5 M14s | (3) | 100 | Ball | Semi-auto | Battlesight 250m zero | Hasty fox-hole, shoulder-aimed, prone | N/A | M14 has no bipod |
| 2 M60 MGs | | 254 ^e | 1 ball to 1 tracer | 2 rd | Zeroed at 400m rear sight on 300m | | Bipod | |
| 7 M14s | | 100 | Ball | Semi-auto | Battlesight 250m zero | | N/A | M14 has no bipod |
| 2 M60 MGs | | 254 ^e | 1 ball to 1 tracer | 2 rd | Zeroed at 400m rear sight on 300m | | Bipod | |
| 7 M14E2s | (3) | 50 | Ball | Semi-auto | Battlesight 250m zero | Hasty fox-hole, shoulder-aimed, prone | Bipod | |
| 2 M14E2s | | 260 | All tracer | | | | | |
| 7 M14E2s | | 50 | Ball | 2 rd | | | | |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | | | | | |
| 7 Stoner rifles | (3) | 150 | Ball | 2 rd | Short range battlesight 250m zero ^d | Hasty fox-hole, shoulder-aimed, prone | None | Bipod belt-carried |
| 2 Stoner MGs | | 600 | 4 ball to 1 tracer | 4 rd | Zeroed at 400m battlesight on 200m | | Bipod | |
| 7 Stoner rifles | | 150 | Ball | 2 rd | Short range battlesight 250m zero ^d | | None | Bipod belt-carried |
| 2 Stoner MGs | | 600 | 1 ball to 1 tracer | | Zeroed at 400m battlesight on 200m | | Bipod | |
| 7 AK47s | (3) | 120 | Ball ^e | Semi-auto | Battlesight 250m zero | Hasty fox-hole, shoulder-aimed, prone | N/A | AK47 has no bipod |
| 2 AK47s | | 332 | | | | | | |
| 7 AK47s | | 120 | | 2 rd | | | | |
| 2 AK47s | | 332 | | | | | | |

NOTES

1. Operational Policy. Because time permitted, a second cycle was fired on Range C, with the squads previously used. This was done to compare semiautomatic fire and automatic fire. There were nine positions. Squad leader was in position five, automatic rifles, machineguns and rifles representing automatic rifles were in positions four and seven (from right to left). Other squad members were in the remaining positions (right to left), in decreasing order of their marksmanship scores. Firers fired at targets as they saw them.

2. M60 machinegunner assistant carried a .45 caliber pistol with hip holster and three magazines.

Table A-9
OPERATIONAL POLICIES RIFLE SQUAD IN NIGHT DEFENSE
AGAINST ATTACK (SERIES ONE)
(Situation 8, Range C)

| Squad Weapon Mix | Squads Used per Mix | Basic Load ^a (per weapon) | Ammunition Mix ^b | Burst Length | Sight Setting | Position | Support | Remarks |
|------------------------|------------------------------|---|------------------------------------|-----------------|---|---|---------|-------------------|
| 7 M14s | 6 | 100 | All tracer | Semi- auto | Battlesight 250m zero | Hasty fox- hole, shoulder- pointed | N/A | M14 has no bipod |
| 2 M14s | | 295 | | | | | | |
| 7 M14E2s | 6 | 80 | 1 ball to 1 tracer | 2 rd | Battlesight 250m zero | Hasty fox- hole, shoulder- pointed | Bipod | |
| 2 M14E2s | | 260 | | | | | | |
| 7 M16E1s | 6 | 300 | 1 ball to 1 tracer | 2 rd | Shortrange battlesight 250m zero ^c | Hasty fox- hole, shoulder- pointed | Bipod | |
| 2 M16E1s | | 759 | | | | | | |
| 7 Stoner rifles | 6 | 180 | 1 ball to 1 tracer | 2 rd | Shortrange battlesight 250m zero ^c | Hasty fox- hole, shoulder- pointed | Bipod | |
| 2 Stoner rifles | | 546 | | | | | | |
| 7 AK47s | 5 ^d | 120 | 1 ball to ^e 1 tracer | 2 rd | Battlesight 250m zero | Hasty fox- hole, shoulder- pointed | N/A | AK47 has no bipod |
| 2 AK47s | | 332 | | | | | | |
| 7 M14s | 6 | 100 | All tracer | Semi- auto | Battlesight 250m zero | Hasty fox- hole, shoulder- pointed | N/A | M14 has no bipod |
| 2 M14E2s | | 260 | | | | | | |
| 7 M16E1s | 6 | 300 | 1 ball to 1 tracer | 2 rd | Shortrange battlesight 250m zero ^c | Hasty fox- hole, shoulder- pointed | Bipod | |
| 2 Colt ARs | | 774 | | | | | | |
| 7 Stoner rifles | 6 | 180 | 1 ball to 1 tracer | 2 rd | Shortrange battlesight 250m zero ^c | Hasty fox- hole, shoulder- pointed | Bipod | |
| 2 Stoner ARs | | 492 | | | | | | |

^a To keep the weight carried by the M60 gunner to AR systems weight, while keeping squad size constant (nine men), two of the seven rifleman were used as assistant machinegunners to carry ammunition.

^b M14 and M14E2 used 20-round magazines; M16E1, Colt automatic rifles, Stoner rifle, Stoner automatic rifle, and AK47 used 30-round magazines. M60 machinegun used 100-round bandoleers, Stoner machinegun used 150-round bandoleers, RPD used 100-round drums.

^c The rifle sight was set with the short side of the L-type battlesight up.

^d Due to a shortage of AK47s, each AK47 squad used the same nine weapons.

^e Due to a shortage of tracer ammunition, two squads fired all ball.

^f Carried between gunner and assistant gunner.

Table A-9 (Concluded)

**OPERATIONAL POLICIES RIFLE SQUAD IN NIGHT DEFENSE
AGAINST ATTACK (SERIES ONE)
(Situation 8, Range C)**

| Squad Weapon Mix | Squads Used per Mix | Basic Load ^a (per weapon) | Ammunition Mix * | Burst Length | Sight Setting | Position | Support | Remarks |
|------------------------|------------------------------|---|-----------------------|-----------------|---|---|---------|-------------------|
| 5 M14s | 6 | 100 | All tracer | Semi- auto | Battlesight 250m zero | Hasty fox- hole, shoulder- pointed | N/A | M14 has no bipod |
| 2 M60 MGs | | 294 ^b | 1 ball to 1 tracer | 2 rd | Zeroed at 400m rear sight on 300m | | Bipod | |
| 7 Stoner rifles | 6 | 180 | 1 ball to 1 tracer | 2 rd | Shortrange battlesight 250m zero ^c | Hasty fox- hole, shoulder- pointed | Bipod | |
| 2 Stoner MGs | | 600 | | | Zeroed at 400m rear sight on 300m | | | |
| 7 AK47s | 5 ^d | 120 | 1 ball to 1 tracer | 2 rd | Battlesight 250m zero | Hasty fox- hole, shoulder- pointed | N/A | AK47 has no bipod |
| 2 RPDs | | 300 | | | Zeroed at 300m rear sight on 300m | | Bipod | |
| 7 M16E1s | 4 | 300 | 1 ball to 1 tracer | 2 rd | Shortrange battlesight 250m zero ^c | Hasty fox- hole, shoulder- pointed | Bipod | |
| 2 Stoner MGs | | 600 | | | Zeroed at 400m battlesight 200m | | | |
| 9 Colt A's | 4 | 268 | All tracer | Semi- auto | Shortrange battlesight 250m zero ^c | Hasty fox- hole, shoulder- pointed | Bipod | |
| | | | 1 ball to 1 tracer | 2 rd | | | | |
| 9 M16E1s | 4 | 300 | All tracer | Semi- auto | Shortrange battlesight 250m zero ^c | Hasty fox- hole, shoulder- pointed | Bipod | |
| | | | 1 ball to 1 tracer | 2 rd | | | | |

NOTES

- 1 Operational Policy. There were nine positions, squad leader was in position five, automatic rifle, machineguns and rifles representing automatic rifles were in positions four and seven (from right to left). Other squad members were in the remaining positions (right to left), in decreasing order of their marksmanship scores. Firers fired at targets when they observed simulator flashes. Firers did not use their sights in night firing because they could not be seen, however, these are the settings placed on the weapons. Of the five AK47 squads, only three fired tracer ammunition. The M60 machinegunner assistant was permitted to assist the gunner in target acquisition.
- 2 M60 machinegunner assistant carried a .45 caliber pistol with hip holster and three magazines.

Table A-10

**OPERATIONAL POLICIES RIFLE SQUAD IN NIGHT DEFENSE
AGAINST ATTACK (SERIES TWO)
(Situation 8, Range C)**

| Squad Weapon Mix | Squads Used per Mix ^a | Basic Load ^b (per weapon) | Ammunition Mix ^c | Burst Length | Sight Setting | Position | Support | Remarks |
|------------------------|---|---|--------------------------------|-----------------|---|---|---------|------------------|
| 1 M14s | (3) 6 (3) | 100 | All tracer | Semi- auto | Battlesight 250m zero | Hasty fox- hole, shoulder- pointed | N/A | M14 has no bipod |
| 2 M14s | | 295 | | | | | | |
| 7 M14s | | 100 | 1 ball to 1 tracer | 2 rd | | | | |
| 2 M14s | | 295 | | | | | | |
| 7 M14s | (3) 6 (3) | 100 | Tracer | Semi- auto | Battlesight 250m zero | Hasty fox- hole, shoulder- pointed | N/A | M14 has no bipod |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | 2 rd | | | Bipod | |
| 7 M14s | | 100 | 1 ball to 1 tracer | 2 rd | | | N/A | M14 has no bipod |
| 2 M14E2s | | 260 | | | | | Bipod | |
| 7 M16E1s | (3) 6 (3) | 300 | All tracer | Semi- auto | Shortrange battlesight 750m zero ^d | Hasty fox- hole, shoulder- pointed | Bipod | |
| 2 M16E1s | | 759 | | | | | | |
| 7 M16E1s | | 300 | 1 ball to 1 tracer | 2 rd | | | | |
| 2 M16E1s | | 759 | | | | | | |
| 7 M16E1s | (3) 6 (3) | 300 | Tracer | Semi- auto | Shortrange battlesight 250m zero ^d | Hasty fox- hole, shoulder- pointed | Bipod | |
| 2 Colt ARs | | 724 | 1 ball to 1 tracer | 2 rd | | | | |
| 7 M16E1s | | 300 | 1 ball to 1 tracer | 2 rd | | | | |
| 2 Colt ARs | | 724 | | | | | | |
| 7 Stoner rifles | (3) 6 (3) | 180 | All tracer | Semi- auto | Shortrange battlesight 250m zero ^d | Hasty fox- hole, shoulder- pointed | Bipod | |
| 2 Stoner rifles | | 546 | | | | | | |
| 7 Stoner rifles | | 180 | 1 ball to 1 tracer | 2 rd | | | | |
| 2 Stoner rifles | | 546 | | | | | | |

^a Three of the squads fired semiautomatic and the other three squads fired automatic.

^b To keep the weight carried by the M60 gunner to AR systems weight, while keeping squad size (nine men), constant, two of the seven riflemen were used as assistant machinegunners to carry ammunition.

^c M14s and M14E2s used 20-round magazines; M16E1s, Colt automatic rifles, Stoner rifles, automatic rifles, and the AK47s used 30-round magazines. M60 machinegun used 100-round bandoleers, Stoner machinegun used 150-round bandoleers.

^d The rifle sight was set with the short side of the L-type battlesight up.

^e Carried between gunner and assistant gunner

^f Due to a shortage of AK47s, each AK47 squad used the same nine weapons.

^g No tracer ammunition was available.

Table A-10 (Concluded)

**OPERATIONAL POLICIES RIFLE SQUAD IN NIGHT DEFENSE
AGAINST ATTACK (SERIES TWO)
(Situation 8, Range C)**

| Squad Weapon Mix | Squads Used per Mix ^a | Basic Load (per weapon) | Ammunition Mix ^c | Burst Length | Sight Setting | Position | Support | Remarks |
|------------------------|---|----------------------------------|--------------------------------|-----------------|---|---|---------|-------------------|
| 7 Stoner rifles | (3) | 180 | All tracer | Semi- auto | Shortrange battlesight 250m zero ^b | Hasty fox- hole, shoulder- pointed | Bipod | |
| 2 Stoner ARs | 6 | 492 | 1 ball to 1 tracer | 2 rd | Battlesight 250m zero | | | |
| 7 Stoner rifles | (3) | 190 | 1 ball to 1 tracer | 2 rd | Shortrange battlesight 250m zero ^b | | | |
| 2 Stoner ARs | 6 | 492 | 1 ball to 1 tracer | 2 rd | Battlesight 250m zero | | | |
| 5 M14s | (3) | 100 | All tracer | Semi- auto | Battlesight 250m zero | Hasty fox- hole, shoulder- pointed | N/A | M14 has no bipod |
| 2 M60 MGs | 6 | 294 ^d | 1 ball to 1 tracer | 2 rd | Zeroed at 400m rear sight on 300m | | Bipod | |
| 7 M14s | (3) | 100 | 1 ball to 1 tracer | 2 rd | Battlesight 250m zero | | N/A | M14 has no bipod |
| 2 M60 MGs | 6 | 294 ^d | 1 ball to 1 tracer | 2 rd | Zeroed at 400m rear sight on 300m | | Bipod | |
| 7 M14E2s | (3) | 80 | All tracer | Semi- auto | Battlesight 250m zero | Hasty fox- hole, shoulder- pointed | Bipod | |
| 2 M14E2s | 6 | 260 | 1 ball to 1 tracer | 2 rd | | | | |
| M14E2s | (3) | 80 | 1 ball to 1 tracer | 2 rd | | | | |
| 2 M14E2s | 6 | 260 | 1 ball to 1 tracer | 2 rd | | | | |
| 7 Stoner rifles | (3) | 180 | 1 ball to 1 tracer | 2 rd | Shortrange battlesight 250m zero ^b | Hasty fox- hole, shoulder- pointed | Bipod | |
| 2 Stoner MGs | 6 | 600 | 4 ball to 1 tracer | 6 rd | Zeroed at 400m battlesight on 200m | | | |
| 7 Stoner rifles | (3) | 190 | 1 ball to 1 tracer | 2 rd | Shortrange battlesight 250m zero ^b | | | |
| 2 Stoner MGs | 6 | 600 | 4 ball to 1 tracer | 6 rd | Zeroed at 400m battlesight on 200m | | | |
| 7 AK47s | (2) | 120 | Ball ^e | Semi- auto | Battlesight 250m zero | Hasty fox- hole, shoulder- pointed | N/A | AK47 has no bipod |
| 2 AK47s | 5 ^f | 332 | | 2 rd | | | | |
| 7 AK47s | (3) | 120 | | 2 rd | | | | |
| 2 AK47s | 5 ^f | 332 | | 2 rd | | | | |

NOTES

- Operational Policy. Because time permitted, a second cycle was fired on Range C, with the squads previously used. This was done to compare semiautomatic fire and automatic fire. There were nine positions. Squad leader was in position five, automatic rifles, machineguns and rifles representing automatic rifles were in positions four and seven (from right to left). Other squad members were in the remaining positions (right to left), in decreasing order of their marksmanship scores. Firers fired at targets when they observed simulator flashes. Firers did not use sights in night firing because they could not be seen, however, these are the settings that were placed on the weapons.
- M60 machinegunner assistant carried a .45 caliber pistol with hip holster and three magazines.

Table A-11
OPERATIONAL POLICIES MACHINEGUN SQUAD
IN DEFENSE AGAINST ATTACK
(Situation 9, Range C)

| Squad Weapon Mix | Squads Used per Mix | Basic Load (per weapon) | Ammunition Mix ¹ | Burst Length | Sight Setting | Position | Support | Remarks |
|--------------------------|------------------------------|----------------------------------|--------------------------------|-----------------|---|--------------------------------------|-------------------------------------|----------|
| 2 M60 bipod MGs | 6 | 1123 | 1 ball to 1 tracer | 2 rd | Zeroed at 400m rear sight on 300m | Hasty foxhole, shoulder- aimed | Bipod | |
| 2 M60 tri- pod MGs | 6 | 900 | 1 ball to 1 tracer | 2 rd | Zeroed at 400m rear sight on 300m | Hasty foxhole, shoulder- aimed | Tripod with hinged butt plate | Free gun |
| 2 Stoner bi- pod MGs | 6 | 3059 | 1 ball to 1 tracer | 2 rd | Zeroed at 400m battlesight 200m | Hasty foxhole, shoulder- aimed | Bipod | |
| 2 Stoner tri- pod MGs | 6 | 2545 | 1 ball to 1 tracer | 2 rd | Zeroed at 400m battlesight 200m | Hasty foxhole, shoulder- aimed | Tripod | Free gun |
| 2 RPD MGs | 5 | 800 | 1 ball to 1 tracer | 2 rd | Zeroed at 300m rear sight on 300m | Hasty foxhole, shoulder- aimed | Bipod | |
| 2 DPM MGs ² | 4 | 752 | Ball | 2 rd | Zeroed at 300m rear sight on 300m | Hasty foxhole, shoulder- aimed | Bipod | |

¹ M60 used 100-round bandoleers; Stoner machinegunners used 150-round bandoleers; DPM used 47-round drums, and RPD used 100-round drums.

² Due to a high rate of malfunctions with ammunition and drums, this mix was fired again.

NOTES

- 1 Operational Policy. Machineguns were in foxholes four and seven and fired on targets as they saw them.
- 2 Each machinegunner assistant and ammunition bearer carried a .45 caliber pistol with hip holster and three magazines.

Table A-12
OPERATIONAL POLICIES RIFLE SQUAD
IN LINE ASSAULT (DUPLEX)
(Situation 1, Range A)

| Squad Weapon Mix | Squads Used per Mix | Basic Load* (per weapon) | Ammunition Mix | Burst Length | Sight Setting | Position | Support | Remarks |
|------------------------|------------------------------|-----------------------------------|-------------------|-----------------|--------------------------|-----------------------------------|---------|-------------------|
| 7 M14s | (3) 6 | 100 | Ball | Semi- auto | Battlesight 250m zero | Marching, shoulder- pointed | N/A | M14 has no bipod |
| 2 M14s | | 295 | | | | | | |
| 7 M14s | | 100 | Duplex | | | | | |
| 2 M14s | | 295 | | | | | | |
| 7 M14s | (3) 6 | 100 | Ball | Semi- auto | Battlesight 250m zero | Marching, shoulder- pointed | N/A | M14 has no bipod |
| 2 M14E2s | | 260 | | 2 rd | | | | Bipod folded back |
| 7 M14s | | 100 | Duplex | Semi- auto | | | | M14 has no bipod |
| 2 M14E2s | | 260 | | 2 rd | | | | Bipod folded back |
| 7 M14E2s | (3) 6 | 80 | Ball | 2 rd | Battlesight 250m zero | Marching, shoulder- pointed | N/A | Bipod folded back |
| 2 M14E2s | | 260 | | | | | | |
| 7 M14E2s | | 80 | Duplex | | | | | |
| 2 M14E2s | | 260 | | | | | | |

* M14 and M14E2 used 20-round magazines.

NOTE

Operational Policy. There were nine lanes. Squad leader was in lane five, automatic rifles and rifles representing automatic rifles were in lanes two and eight (from right to left). Other squad members were in the remaining lanes (right to left), in decreasing order of their marksmanship scores. Firers in lanes one through four fired on the right half of the squad sector, and five through nine on the left half of the squad sector, or directly at a target when they saw one. Most firers did not use sights in marching fire as they were instructed to point rather than to aim through the sights. However, these are the settings that were placed on the weapons.

Table A-13

**OPERATIONAL POLICIES RIFLE SQUAD AS BASE OF FIRE
SUPPORTING THE ASSAULT (DUPLEX)
(Situation 2, Range A)**

| Squad Weapon Mix | Squads Used per Mix | Basic Load * (per weapon) | Ammunition Mix | Burst Length | Sight Setting | Position | Support | Remarks |
|------------------------|------------------------------|------------------------------------|-------------------|-----------------|--------------------------|--|-----------------------------------|------------------|
| 7 M14s | (3) | 100 | Ball | Semi- auto | Battlesight 250m zero | Hasty fox- hole, ⁴ shoulder- aimed | N/A | M14 has no bipod |
| 2 M14s | | 295 | | | | | | |
| 7 M14s | | 100 | Duplex | | | | | |
| 2 M14s | | 295 | | | | | | |
| 7 M14s | (3) | 100 | Ball | Semi- auto | Battlesight 250m zero | Hasty fox- hole, ⁴ shoulder- aimed | N/A | M14 has no bipod |
| 2 M14E2s | | 260 | | 2 rd | | | Bipod and hinged butt plate | |
| 7 M14s | | 100 | Duplex | Semi- auto | | | N/A | M14 has no bipod |
| 2 M14E2s | | 260 | | 2 rd | | | Bipod and hinged butt plate | |
| 7 M14E2s | (3) | 80 | Ball | 2 rd | Battlesight 250m zero | Hasty fox- hole, ⁴ shoulder- aimed | Bipod and hinged butt plate | |
| 2 M14E2s | | 260 | | | | | | |
| 7 M14E2s | | 80 | Duplex | | | | | |
| 2 M14E2s | | 260 | | | | | | |

* M14 and M14E2 used 20-round magazines.

NOTE

Operational Policy There were nine positions. Squad leader was in position five, automatic rifles, and rifles representing automatic rifles, were in positions three and seven (from right to left). Other squad members were in the remaining positions (right to left) in decreasing order of their marksmanship scores. Riflemen in positions one through four fired on the right half of the target arrays, and five through nine on the left half of the target arrays with assigned fire priorities first to targets of opportunity and second to an even distribution of fire. The assigned fire priorities of ARs were first to automatic weapons targets, second to other targets of opportunity, and third to an even distribution of fire. The two ARs traversed from opposite flanks of the array to its center. Squads fired for two minutes on each target array.

Table A-14

OPERATIONAL POLICIES MACHINEGUN SQUAD
IN FIRE SUPPORT OF THE ASSAULT (DUPLEX)
(Situation 3, Range A)

| Squad Weapon Mix | Squads Used per Mix | Basic Load ^a (per weapon) | Ammunition Mix | Burst Length | Sight Setting | Position | Support | Remarks |
|------------------------|------------------------------|---|-------------------------|-----------------|---|---|---|---------|
| 2 M60 bipod MGs | (3) 6 | 1000 | 4 ball to 1 tracer | 6 rd | Zeroed at 400m rear sight on 300m | Hasty fox- hole, shoulder- aimed | Bipod | |
| 2 M60 bipod MGs | (3) | | 4 duplex to 1 tracer | | | | | |
| 2 M60 tri- pod MGs | (3) 6 | 800 | 4 ball to 1 tracer | | | | Tripod using traversing and elevating mechanism ^b | |
| 2 M60 tri- pod MGs | (3) | | 4 duplex to 1 tracer | | | | | |

^a Machineguns used 200-round ammunition boxes.

^b Gunner wore glove on left hand while using traversing and elevating mechanism.

NOTES

- 1 Operational Policy. Assigned fire priorities were first to automatic weapons targets, second to other targets of opportunity, and third to an even distribution of fire. The two machineguns traversed from opposite flanks of the array to its center. Barrels were changed after firing for 1 minute and 45 seconds on the left target array. This time was administrative although the time to change barrels was recorded. Machineguns were in positions three and seven and fired for a total of two minutes on each target array.
- 2 Each machinegunner assistant and ammunition bearer carried a .45 caliber pistol with hip holster and three magazines.

Table A-15
OPERATIONAL POLICIES RIFLE SQUAD
IN APPROACH TO CONTACT (DUPLEX)
(Situation 4, Range B)

| Squad Weapon Mix | Squads Used per Mix | Basic Load* (per weapon) | Ammunition Mix | Burst Length | Sight Setting | Position | Support | Remarks |
|------------------------|------------------------------|-----------------------------------|-----------------------|-----------------|--------------------------|------------|---------|-------------------|
| 7 M14s | (3) | 100 | Ball | Semi- auto | Battlesight 250m zero | Quick-fire | N/A | M14 has no bipod |
| 2 M14s | | 295 | All tracer | | | | | |
| 7 M14s | | 100 | Duplex | | | | | |
| 2 M14s | | 295 | All tracer | | | | | |
| 7 M14s | (3) | 100 | Ball | Semi- auto | Battlesight 250m zero | Quick-fire | N/A | M14 has no bipod |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | 2 rd | | | | Bipod folded back |
| 7 M14s | | 100 | Duplex | Semi- auto | | | | M14 has no bipod |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | 2 rd | | | | Bipod folded back |
| 7 M14E2s | (3) | 80 | Ball | 2 rd | Battlesight 250m zero | Quick-fire | N/A | Bipod folded back |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | | | | | |
| 7 M14E2s | | 80 | Duplex | | | | | |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | | | | | |

* M14 and M14E2 used 20-round magazines.

NOTE

Operational Policy There were nine lanes. Squad leader was in lane five, automatic rifles, and rifles representing automatic rifles, were in lanes three and seven (from right to left). Other squad members were in the remaining lanes (right to left), in decreasing order of their marksmanship scores. The firers were instructed that they could either point or aim so long as the weapon butt was in the shoulder. However, target exposure times were deliberately short to cause the men to point. Firers engaged targets as they saw them.

Table A-16

**OPERATIONAL POLICIES RIFLE SQUAD AS BASE OF FIRE
SUPPORTING THE ADVANCE (DUPLEX)
(Situation 5, Range B)**

| Squad Weapon Mix | Squads Used per Mix | Basic Load (per weapon) | Ammunition Mix | Burst Length | Sight Setting | Position | Support | Remarks |
|------------------|---------------------|-------------------------|--------------------|--------------|-----------------------|-----------------------|-----------------------------|------------------|
| 7 M14s | (3) | 100 | Ball | Semi-auto | Battlesight 250m zero | Prone, shoulder-aimed | N/A | M14 has no bipod |
| 2 M14s | | 295 | All tracer | | | | | |
| 7 M14s | | 100 | Duplex | | | | | |
| 2 M14s | | 295 | All tracer | | | | | |
| 7 M14s | (3) | 100 | Ball | Semi-auto | Battlesight 250m zero | Prone, shoulder-aimed | N/A | M14 has no bipod |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | 2 rd | | | Bipod and hinged butt plate | |
| 7 M14s | | 100 | Duplex | Semi-auto | | | N/A | M14 has no bipod |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | 2 rd | | | Bipod and hinged butt plate | |
| 7 M14E2s | (3) | 50 | Ball | Semi-auto | Battlesight 250m zero | Prone, shoulder-aimed | Bipod and hinged butt plate | |
| 2 M14L2s | | 260 | All tracer | | | | | |
| 7 M14E2s | | 50 | Duplex | | | | | |
| 2 M14E2s | | 260 | All tracer | | | | | |

* M14 and M14E2 used 20-round magazines.

NOTE

Operational Policies. There were nine positions. Squad leader was in position five, automatic rifles, and rifles representing automatic rifles, were in positions three and seven (from right to left). Other squad members were in the remaining positions (right to left), in decreasing order of their marksmanship scores. Riflemen in positions one through four fired on the right half of the target arrays, and five through nine on the left half of the target arrays with assigned fire priorities first to targets of opportunity and second to an even distribution of fire. The assigned fire priorities of ARs was first to automatic weapons targets, second to other targets of opportunity, and third to an even distribution of fire. The two ARs traversed from opposite flanks of the array to its center. Squads fired for two minutes on each target array.

Table A-17
OPERATIONAL POLICIES MACHINEGUN SQUAD
IN FIRE SUPPORT OF THE ADVANCE (DUPLEX)
(Situation 6, Range B)

| Squad Weapon Mix | Squads Used per Mix | Basic Load* (per weapon) | Ammunition Mix | Burst Length | Sight Setting | Position | Support | Remarks |
|------------------------|------------------------------|-----------------------------------|-----------------------|-----------------|---|------------------------------|---|----------|
| 2 M60 bipod MGs | 6 | 1000 | 4 ball to 1 tracer | 6 rd | Zeroed at 400m rear sight on 400m for target array Z and 600m for target arrays X and Y | Prone, shoulder- aimed | Bipod with hinged butt plate | |
| 2 M60 bipod MGs | | | Duplex | | Zeroed at 400m rear sight on 400m, 700m and 900m re- spectively for target arrays Z, X, and Y | | | |
| 2 M60 tripod MGs | 6 | 400 | 4 ball to 1 tracer | 6 rd | Zeroed at 400m rear sight on 400m for target array Z and 600m for target arrays Z, X, and Y | Prone, shoulder- aimed | Tripod with hinged butt plate | Free gun |
| 2 M60 tripod MGs | | | Duplex | | Zeroed at 400m rear sight on 400m, 700m and 900m re- spectively for target arrays Z, X, and Y | | | |

* A separate basic load was issued for firing on each target array.

NOTES

1. Operational Policy: The assigned fire priorities were first to automatic weapons targets, second to other targets of opportunity, and third to an even distribution of fire. The two machineguns traversed from opposite flanks of the array to its center. The squad fired for two minutes each on target arrays Z, X, and Y, respectively. Barrels were changed between target arrays. The time to change barrels was administrative, however, it was recorded.
2. Each machinegunner assistant and ammunition bearer carried a .45 caliber pistol with hip holster and three magazines.

Table A-18
OPERATIONAL POLICIES RIFLE SQUAD IN DEFENSE
AGAINST ATTACK (DUPLEX)
(Situation 7, Range C)

| Squad Weapon Mix | Squads Used per Mix | Basic Load (per weapon) | Ammunition Mix ^c | Burst Length | Sight Setting | Position | Support | Remarks |
|------------------|---------------------|-------------------------|-----------------------------|--------------|-----------------------------------|--------------------------------|---------|------------------|
| 7 M14s | (3) | 100 | Ball | Semi-auto | Battlesight 250m zero | Hasty fox-hole, shoulder-aimed | N A | M14 has no bipod |
| 1 M14s | | 296 | All tracer | | | | | |
| 1 M14s | | 100 | Duplex | | | | | |
| 2 M14s | | 296 | All tracer | | | | | |
| 7 M14E2s | (3) | 40 | Ball | 2 rd | Battlesight 250m zero | Hasty fox-hole, shoulder-aimed | Bipod | |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | | | | | |
| 7 M14E2s | | 90 | Duplex | | | | | |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | | | | | |
| 7 M14s | (3) | 100 | Ball | Semi-auto | Battlesight 250m zero | Hasty fox-hole, shoulder-aimed | N A | M14 has no bipod |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | | | | Bipod | |
| 7 M14s | | 100 | Duplex | | | | N A | M14 has no bipod |
| 2 M14E2s | | 260 | 1 ball to 1 tracer | | | | Bipod | |
| 5 M14s | (3) | 100 | Ball | Semi-auto | Battlesight 250m zero | Hasty fox-hole, shoulder-aimed | N A | M14 has no bipod |
| 2 M60 MGs | | 294 ^b | 1 ball to 1 tracer | 2 rd | Zeroed at 400m rear sight on 300m | | Bipod | |
| 4 M14s | | 100 | Duplex | Semi-auto | Battlesight 250m zero | | N A | M14 has no bipod |
| 2 M60 MGs | | 294 ^b | 1 ball to 1 tracer | 2 rd | Zeroed at 400m rear sight on 300m | | Bipod | |

^a Three of these squads fired duplex, and the other three squads fired ball and/or tracer.

^b To keep the weight carried by the M60 gunner to AR systems weight, while keeping squad size (mine menu) constant, two of the seven riflemen were used as assistant machinggunners to carry ammunition.

^c M14 and M14E2 used 20-round magazines, M60 machinegun used 100-round bandoleers.

^d Carried between gunner and assistant gunner.

NOTES

1. Operational Policy: There were nine positions. Squad leader was in position five, automatic rifles, machineguns and rifles representing automatic rifles, were in positions four and seven (from right to left). Other squad members were in the remaining positions (right to left), in decreasing order of their marksmanship scores. Firers fired at targets as they saw them. The M60 machinegunner assistant was permitted to assist the gunner in target acquisition.

2. M60 machinegunner assistant carried a .45 caliber pistol with hip holster and three magazines.

Table A-19
OPERATIONAL POLICIES RIFLE SQUAD IN NIGHT DEFENSE
AGAINST ATTACK (DUPLEX)
(Situation 8, Range C)

| Squad Weapon Mix | Squads Used per Mix ^A | Basic load ^B (per weapon) | Ammunition Mix ^C | Burst Length | Sight Setting | Position | Support | Remarks | |
|------------------------|---|---|--------------------------------|-------------------------|--------------------------|---|---|-----------------------------------|-------------------------|
| 7 M14s | (3) | 100 | All tracer | Semi- auto | Battlesight 250m zero | Hasty fox- hole, shoulder- pointed | N/A | M14 has no bipod | |
| 2 M14s | | 295 | | | | | | | |
| 7 M14s | | (3) | 1 duplex to 1 tracer | | | | | | |
| 2 M14s | | | 295 | | | | | | All tracer |
| 7 M14s | (3) | 100 | All tracer | Semi- auto | Battlesight 250m zero | Hasty fox- hole, shoulder- pointed | N/A | M14 has no bipod | |
| 2 M14F 2s | | 260 | 1 ball to 1 tracer | 2 rd | | | Bipod and hinged butt plate | | |
| 7 M14s | | (3) | 100 | 1 duplex to 1 tracer | | | Semi- auto | N/A | M14 has no bipod |
| 2 M14E 2s | | | 260 | 1 ball to 1 tracer | | | 2 rd | Bipod and hinged butt plate | |
| 7 M14E 2s | (3) | 80 | All tracer | 2 rd | Battlesight 250m zero | Hasty fox- hole, shoulder- pointed | Bipod and hinged butt plate | | |
| 2 M14F 2s | | 260 | 1 ball to 1 tracer | | | | | | |
| 7 M14E 2s | | (3) | 80 | | | | | | 1 duplex to 1 tracer |
| 2 M14E 2s | | | 260 | | | | | | 1 ball to 1 tracer |
| 5 M14s | (3) | 100 | All tracer | Semi- aut | Battlesight 250m zero | Hasty fox- hole, shoulder- pointed | N/A | M14 has no bipod | |
| 2 M60 MGs | | 294 ^D | 1 ball to 1 tracer | 2 rd | Rear sight on 300m | | Bipod and hinged butt plate | | |
| 5 M14s | | (3) | 100 | 1 duplex to 1 tracer | Semi- auto | | Battlesight 250m zero | N/A | M14 has no bipod |
| 2 M60 MGs | | | 294 ^D | 1 ball to 1 tracer | 2 rd | | Zeroed at 400m rear sight on 300m | Bipod and hinged butt plate | |

^a Three of these squads fired duplex and the other three squads fired ball and/or tracer.

^b To keep the weight carried by the M60 gunner & AR systems weight, while keeping squad size (four men) constant, two of the seven riflemen were used as assistant machinegunners to carry ammunition.

^c M14 and M14E 2 used 20-round magazines. M60 machinegun used 100-round bandoleers.

^d Carried between gunner and assistant gunner.

NOTES

1. Operational Policy: There were nine positions. Squad leader was in position five, automatic rifles, machineguns and rifles representing automatic rifles, were in positions four and seven (from right to left). Other squad members were in the remaining positions (right to left), in decreasing order of their marksmanship scores. Firers fired at targets when they observed simulator flashes. Firers did not use sights for night firing because they could not be seen, however, these are the settings that were placed on the weapons. The M60 machinegunner assistant was permitted to assist the gunner in target acquisition.

2. M60 machinegunner assistant carried a .45 caliber pistol with hip holster and three magazines.

Table A-20

**OPERATIONAL POLICIES MACHINEGUN SQUAD
IN DEFENSE AGAINST ATTACK (DUPLEX)
(Situation 9, Range C)**

| Squad Weapon Mix | Squads Used per Mix | Basic Load * (per weapon) | Ammunition Mix | Burst Length | Sight Setting | Position | Support | Remarks |
|------------------------|------------------------------|------------------------------------|-------------------------|-----------------|---|---|-------------------------------------|----------|
| 2 M60 bipod MGs | (3) | 1123 | 1 ball to 1 tracer | 2 rd | Zeroed at 400m rear sight on 300m | Hast: fox- hole, shoulder- aimed | Bipod | |
| 2 M60 bipod MGs | (3) | | 1 duplex to 1 tracer | | | | | |
| 2 M60 tripod MGs | (3) | 900 | 1 ball to 1 tracer | | | | Tripod with hinged butt plate | Free gun |
| 2 M60 tripod MGs | (3) | | 1 duplex to 1 tracer | | | | | |

* Machineguns used 200-round ammunition boxes.

NOTES

- 1 Operational Policy. Machineguns were in foxholes four and seven, and targets were fired on as they were seen.
- 2 Each machinegunner assistant and ammunition bearer carried a .45 caliber pistol with hip holster and three magazines.

Annex B

RANGES, INSTRUMENTATION, AND DATA COLLECTION

Annex B

RANGES, INSTRUMENTATION, AND DATA COLLECTION

1. RANGES

Detailed information regarding the experimentation ranges, including sketch maps and reference tables that record firing distances, survey data, and visibility data, are presented in Appendixes 1 through 3 to this annex.

2. INSTRUMENTATION

The instrumentation described below included both the data sensing and recording system and the target elements. The block diagram (Figure B-1) shows the general layout and data flow.

a. Control and Recording Van

(1) Digital Events Actuator and Evaluator System

This system issued commands to the range equipment, and accepted, processed, and recorded data from it. It was made up of a Scientific Data System Model 910 computer, an events actuator subsystem (output), and an events evaluator subsystem (input). Peripheral equipment included an input-output teletypewriter, a paper tape unit, and a magnetic tape unit. The actuator subsystem was capable of commanding up to 102 contact closures to control target-raising and -lowering mechanisms, weapon simulator firings, and a digital clock. The evaluator subsystem scanned 384 input lines every 4 milliseconds and was designed to detect, store, and process signal changes under program control. A change in status was detected by comparing the current input signals with the stored result of the previous scan. Changes in status were processed and recorded on magnetic tape. Each could be summarized on a typed printout. The scanned input signals represented hits, near misses, target positions (up or down), weapon simulator firings, and rounds fired.

(2) Control Console

The control console, located in the center room of the trailer, is shown in Figure B-2. The floor sections of the control console contained all power and signal cables for the console, an auxiliary power supply for clock and camera controls, and the intercom power supply. The console consisted of five operator positions, each capable of controlling up to ten target elements. The operator control panels, which occupied the

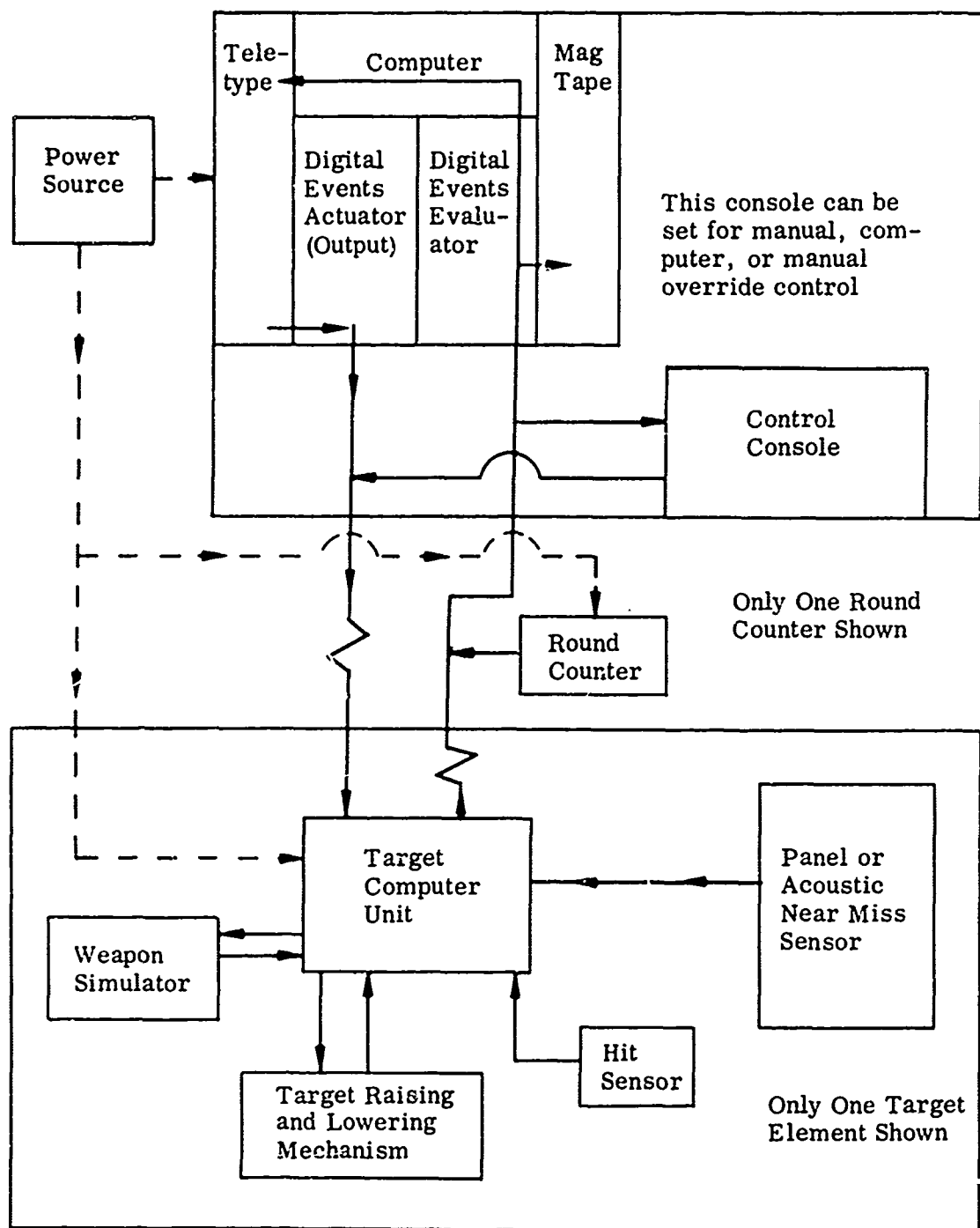


Figure B-1 DIAGRAM OF SAWS RANGE INSTRUMENTATION

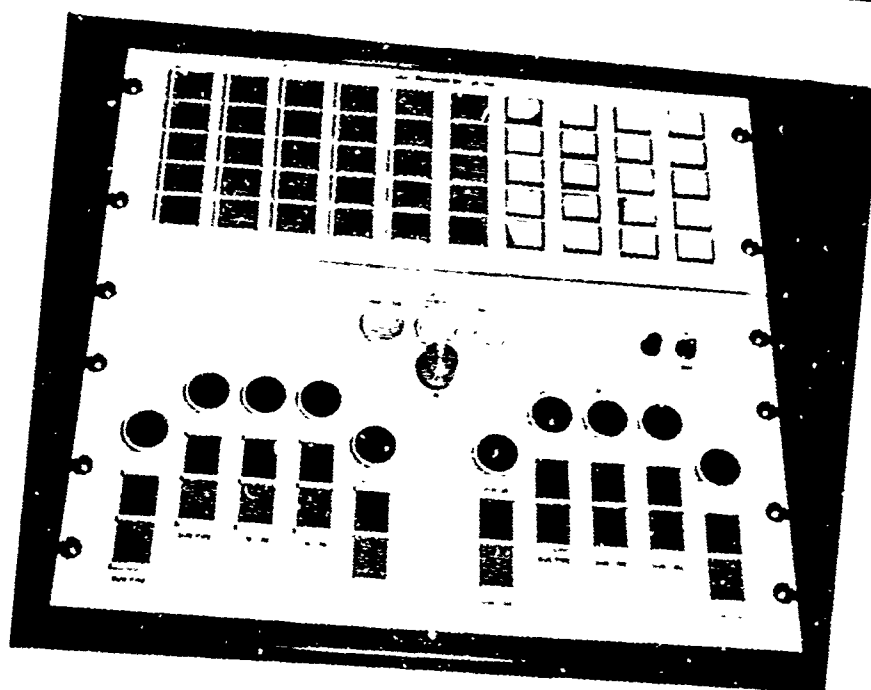
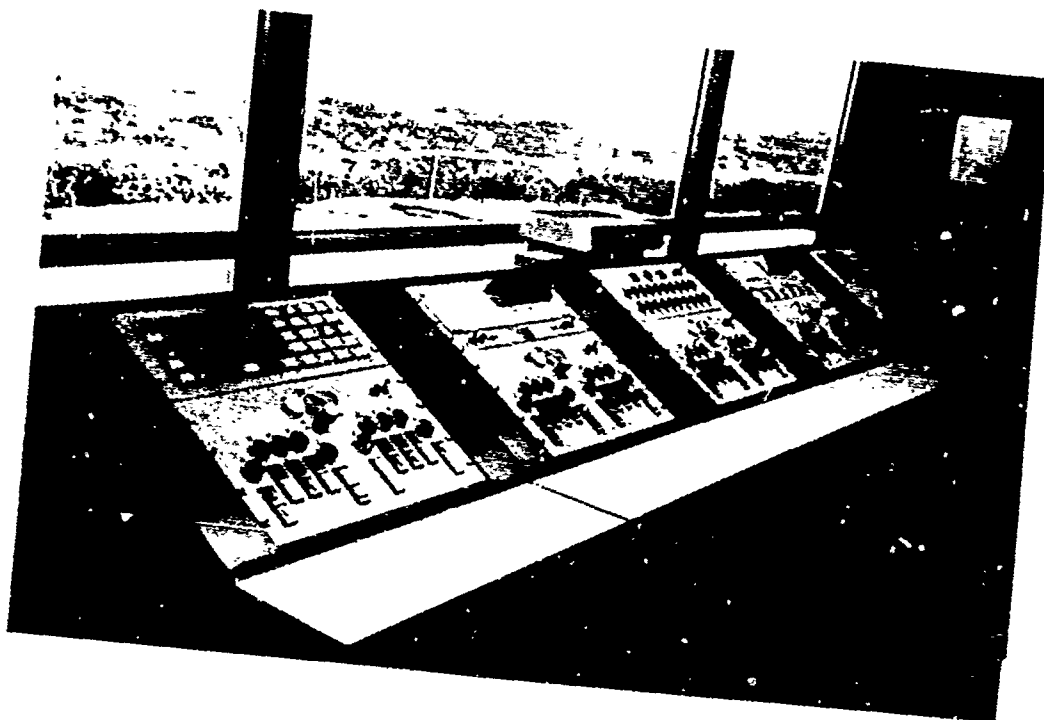


Figure B-2
TWO VIEWS OF SAWS INSTRUMENTATION CONTROL CONSOLE

lower portion of each operator position, were designed to control ten targets and their associated weapon simulators. Manual control was used during calibration, testing, and warm-up periods. Each control panel included:

- 1) An on-off switch and power indicator light (A)
- 2) A three-position mode control switch with associated indicator lights (B) to designate COMPUTER MODE, in which manual control could not be exercised; COMPUTER-MANUAL OVERRIDE, in which manual control could be used to raise or lower targets or fire simulators independently of the computer; MANUAL, in which the computer did not exercise control but still collected data
- 3) Ten sets of three pushbuttons each, with each set including a GUN-FIRE control (C) that would fire the associated simulator as long as the button was depressed; an alternate action POP-UP control (D) that could command the targets up or down (the button was illuminated when the target was up); a KILL-RESET button (E) that lit when the associated target was hit. By depressing this button a target element could be brought back into action

In addition the following functions were included:

- 1) The upper portion of Position No. 1 contained a weapon signature simulator malfunction panel that was illuminated if the simulator failed to receive a command to fire or fired without a command
- 2) Positions No. 2 and 4 contained synchronized digital clocks that provided experimentation run time
- 3) Position No. 3 contained the master control and event panel that controlled starting, stopping, and sequencing of experimental runs; an intercom master unit was mounted above Operator Position No. 3
- 4) The upper portion of Position No. 5 was the target mechanism malfunction panel, which consisted of an indicator light for each target element. Under normal circumstances, if a target fails to respond to command, or acts without command, the proper indicator (1 through 50) illuminated. Appropriate delays were built into the circuitry to allow for target mechanism reaction time

b. Target Elements

Each target element consisted of a target body with a hit sensor, a raising-and-lowering mechanism, and an electronic target computer unit. Some targets were equipped with weapon signature simulators (weapon simulator) and an acoustic or panel near miss sensor and associated electronic equipment. The target element was contained in a redwood box either 24 by 34 by 74 inches or 24 by 34 by 96 inches, depending on the size of the target body. The box was dug in to conceal the target, except when it was raised.

(1) Target Body

Targets were stamped aluminum, rubber backed, and in three sizes (Figure B-3). Each target was equipped with a crystal hit sensor designed to detect the shock caused by a bullet striking the metal target and transform this shock into an electrical impulse that was fed to the target computer unit (TCU). After being processed in the TCU, this hit signal was then sent to the Control and Recording Van, where it caused the red kill indicator on the control console to light, and to the digital events evaluator where it was evaluated every 4 milliseconds for a change of status. When a hit was indicated, the events actuator received a signal and commanded the target raising-and-lowering mechanism to lower the target.

(2) Raising-and-Lowering Mechanism

A modified M-31A1 trainfire target mechanism was used to raise the targets and lower them on command or when they were hit. A mechanical assist was added to the mechanism, enabling it to operate with the targets under winds up to 15 knots. Electrical filtering was added so the mechanism would not interfere with other system components.

(3) Weapons Simulators

Weapons simulators were installed as required on each range and simulated the flash, blast, and sound of rifle, automatic rifle, and machinegun fire. The system included the simulator, a control unit, and fuel storage tanks (propane and oxygen) positioned under the target box. The control unit included a timing device that released fuel through electrically controlled solenoid valves into a firing chamber. The gases in the firing chamber were ignited by an automotive-type ignition system and produced the flash, blast, and sound of gunfire at the muzzle of the simulator. Control for this subsystem was provided by the Digital Events Actuator or the console operator through the target computer unit at each target element. The simulators were designed with the capability to operate at a maximum rate of 500 simulated rounds per minute to represent automatic fire. To simulate semiautomatic fire, the computer

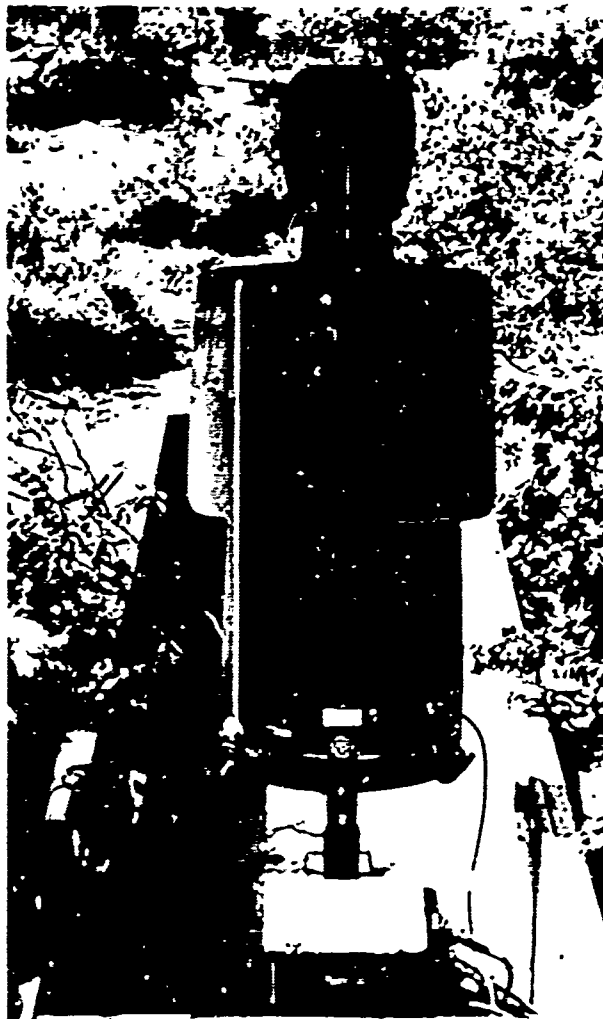
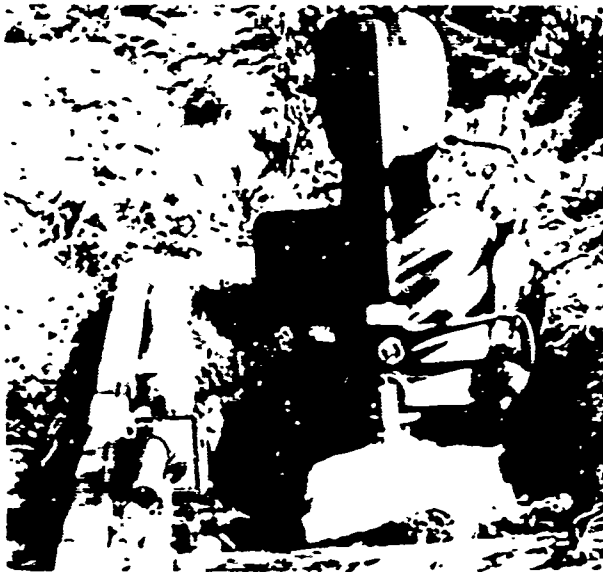


Figure B-3 TARGET BODIES:
HEAD AND SHOULDER (upper left),
KNEELING (lower left),
AND STANDING

commanded the simulator to fire and commanded it to stop before the second simulated round could be fired. Different rates and amounts of fire could thus be simulated by varying the time interval in 120 millisecond steps between the stop and start commands.

During the firing cycle, a signal from the electronic timing circuit in the gun simulator was sent to the target computer unit where it was used for two purposes: 1) to cause a signal to be generated for use in blanking out the acoustic near miss sensing channel so that the noise from the simulator firing would not be scored as a near miss; 2) to cause a second signal to be produced that indicated the simulator was commanded to fire. This second signal was sent from the target computer unit to the trailer where it was sent to the digital events evaluator, and subsequently stored on tape.

(4) Acoustic Near Miss Sensor

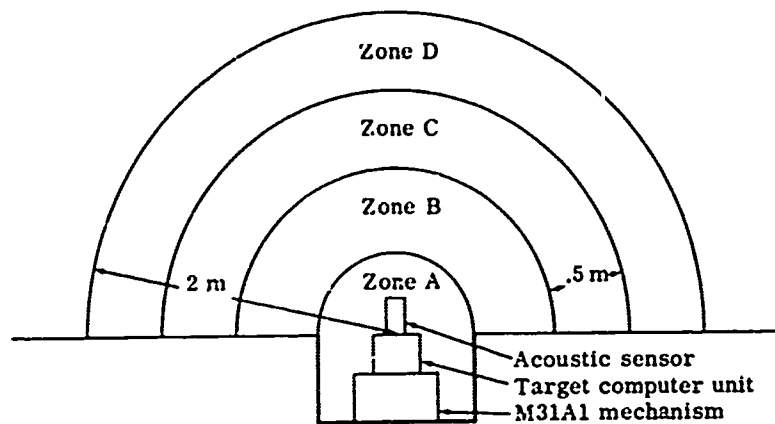
Also included as part of some target elements was a specialized microphone (Acoustic Near Miss Sensor) designed to detect the shock wave produced by a projectile (Figure B-4). The associated circuitry was designed to produce data for projectiles passing within 2 meters of the microphone. The miss zone signals were routed from the target computer unit to the digital events evaluator.

(5) Panel Near Miss Sensor

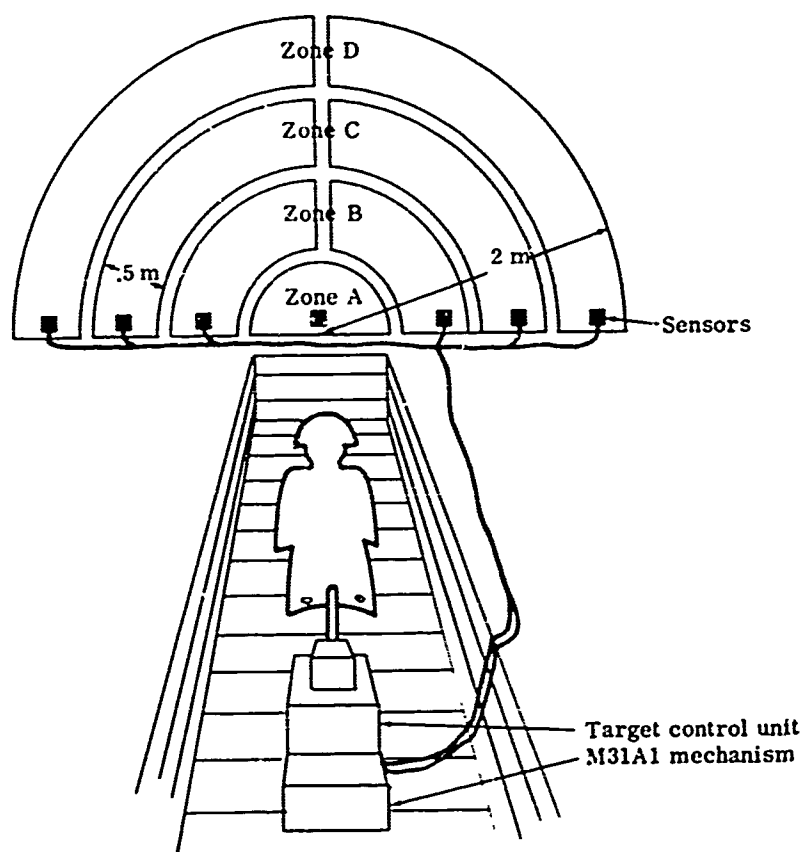
A solid panel miss sensing system was used for longer ranges. This panel was constructed of seven rubber backed metal sections glued to a plywood panel of 2 meter radius. The seven sections had hit sensors that were connected electrically to provide four two-dimensional, half-meter, concentric, sensing zones from the base of the panel (Figure B-4). Hit sensors were identical to those used on the target bodies. Output from a sensor was routed to a target computer unit modified for use with these panel near miss sensors, and then to the digital events evaluator.

(6) Target Computer Unit

The target computer unit, an electronic control and signal conditioning device, was used at each target element to control the target raising-and-lowering mechanism and weapons simulator and conditioned hit and miss signals before transmission to the Control and Recording Van. The unit contained up to three printed circuit cards, an ammunition selector switch, and associated electronic components. It was housed in a cast aluminum box mounted on top of the target raising-and-lowering mechanism. Card A contained the circuitry necessary for producing DC-power, control, and status of the weapon simulator and the target raising-and-lowering mechanism and conditioning the signal from the target hit sensor. When miss information was required at the target



Miss Sensing Zones



Front of Target Encasement

Figure B-4 DIAGRAMMATIC VIEWS OF TARGET CONTROL AND MISS SENSING SYSTEM

location, Cards B and C (when using the acoustic near miss sensor, or B prime and C prime when using the panel near miss sensor) were inserted. The function of these two cards was to gate the signal from the sensor into one of four half-meter zones and to condition the signal for transmission to the Control and Recording Van. The ammunition selector switch allowed the selection of four preset types of ammunition and also had one variable selection position.

c. Round Count System

An electronic round counting device was installed at each stationary firing position to provide the capabilities of counting each round fired from that position as a function of time. The system consisted of a transducer (directional microphone) connected to a signal conditioning box. The transducer was mounted to one side of the muzzle of the weapon and on line with it. It was pointed at the general area of the muzzle and sensed the report when the weapon was fired. A signal then was routed to the signal conditioning box, then to the events evaluator subsystem, and then to the computer memory for permanent record. The system was adjusted to reduce the counting of rounds from adjacent firers.

d. Range Power and Data Distribution System

Multiconductor armored cable systems for power and data control information were installed (buried in the target area) to control the target elements and transmit collected data to the Control and Recording Van. Junction boxes were positioned on the range for ease of maintenance and system flexibility. Power was provided by two of three 45kw diesel generators that were normally required to operate the system, one for the Control and Recording Van and one for range power. A power switching central was provided so that the third (spare) generator could replace either of the others. Over and under voltage automatic cutoff relays and accurate reading voltmeters were installed on the switching central to prevent system damage. Step-up transformers were connected to all three range power lines to increase the normal three-phase generator output from 208 volts to 230 volts since the range required three approximately balanced, single phase loads.

e. Meteorological Instrumentation

Meteorological data were recorded during each experimentation run at each range using the following devices:

- 1) Wind measuring set that recorded wind speed in miles per hour and wind direction in tenths of degrees from magnetic north
- 2) Recording microbarograph that recorded barometric pressure in inches of mercury (on Range C only)

- 3) Hygrothermograph that recorded temperature (Fahrenheit) and humidity
- 4) Standard rain gauge that measured rainfall in inches (Range C only)
- 5) Photometer that measured ambient light data in foot lamberts (night runs, Range C only)

f. Life of Target Bodies and Panels

The life expectancy of hit sensitive target bodies and panels depended on several factors: the number of holes in the targets or panel, the location of the holes, and the type of projectile fired. Observations noted during the experiment were:

- 1) An accidental hit on the sensor or wire harness rendered the target or panel useless
- 2) A concentration of hits around the sensor tended to isolate it, causing the target or panel to become insensitive
- 3) A concentration of hits in the neck of the target rendered the head insensitive
- 4) One hit in the center line stiffening rib in the neck area tended to render the head insensitive

g. Target System Command Program

Target system command programs were written to activate instrumentation in the Control and Recording Van and the targets and simulators in the target arrays. These programs were transposed into computer language in the form of computer command tapes. The use of these tapes provided for the reproducibility of identical firing cues and target exposures for each squad in each tactical situation. A summary of each target system command program is provided in Appendix 4.

3. DATA COLLECTION

a. Manual Data Collection

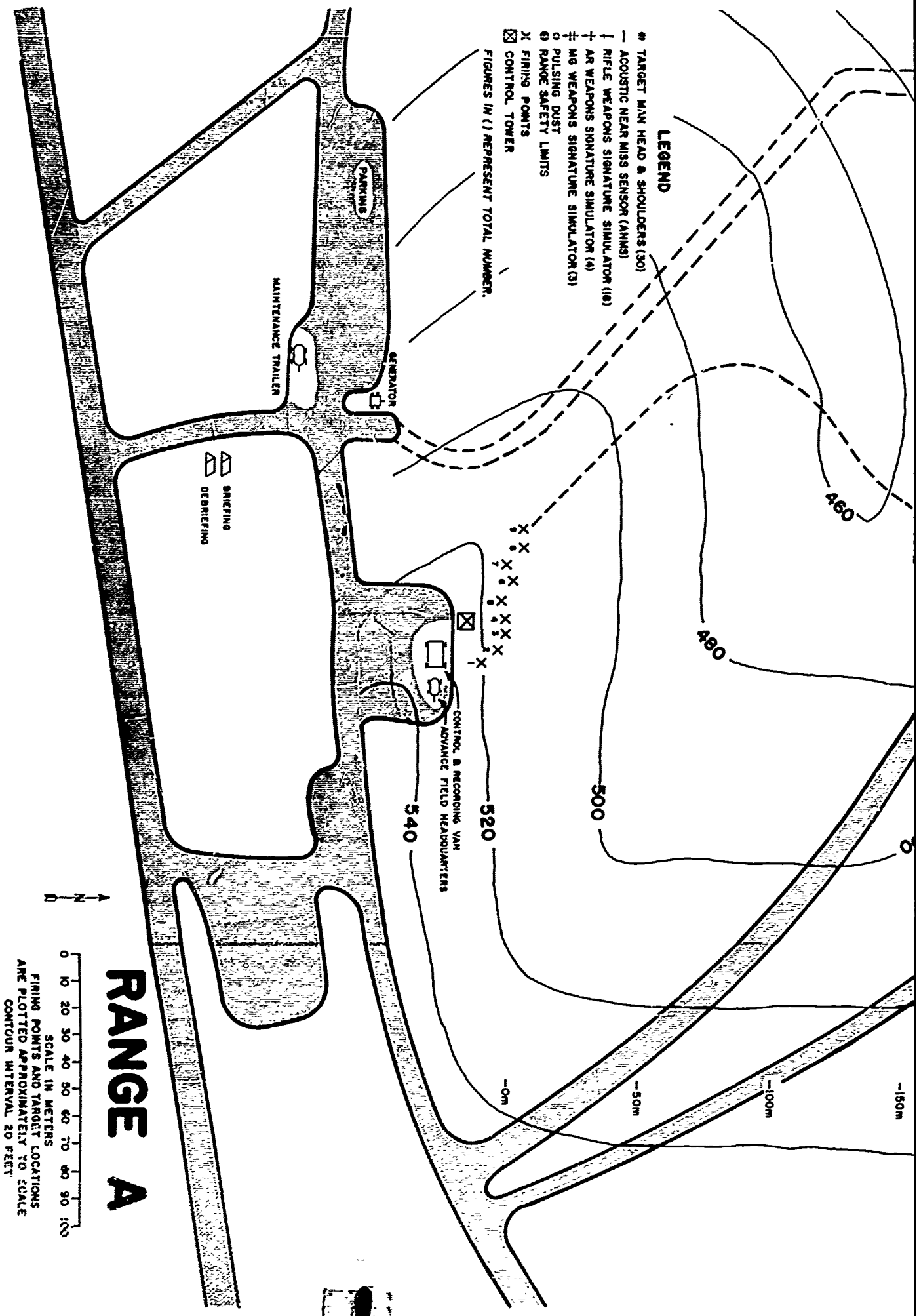
In addition to data collected using the instrumentation described above, the following data were collected manually: weapons reliability data, count of ammunition remaining, and count of target hits.

b. Film Data Collection

Hand held and tripod mounted individually operated 16mm FILMO cameras and remotely operated magazine loaded 16mm gun cameras provided motion picture coverage for study and correction of safety procedures and weapons malfunctions. Each range was provided with one cameraman equipped with a FILMO camera to record the actions and reactions of experimentation subjects during record runs, both in stationary and moving situations. Remote camera coverage was also provided. One camera was located within the target area on each range and provided a record of an individual target element during a record run. It was remotely controlled from the Control and Recording Van and actuated just before the target was raised. Several remote cameras were used in the moving situations on Range A (Situation 1) and Range B (Situation 4). These cameras were located to one side of the path of movement and pointed toward the firers as they approached the targets, providing continuous coverage of the actions of men and weapons during a record run. The cameras were mounted on poles and armored to prevent damage. Dummy camera positions were spaced along the course to prevent cuing firers to the location of event start positions. Cameras were activated by an operator that followed the firers. The cameras operated at 64 frames per second to permit slow motion review. Photographic coverage was primarily with black and white film, although color was used occasionally to emphasize specific points and for documentary purposes.

c. Data Collection Accuracy

The accuracy of the computer gathered data was continuously checked by manual counts throughout the experimentation.

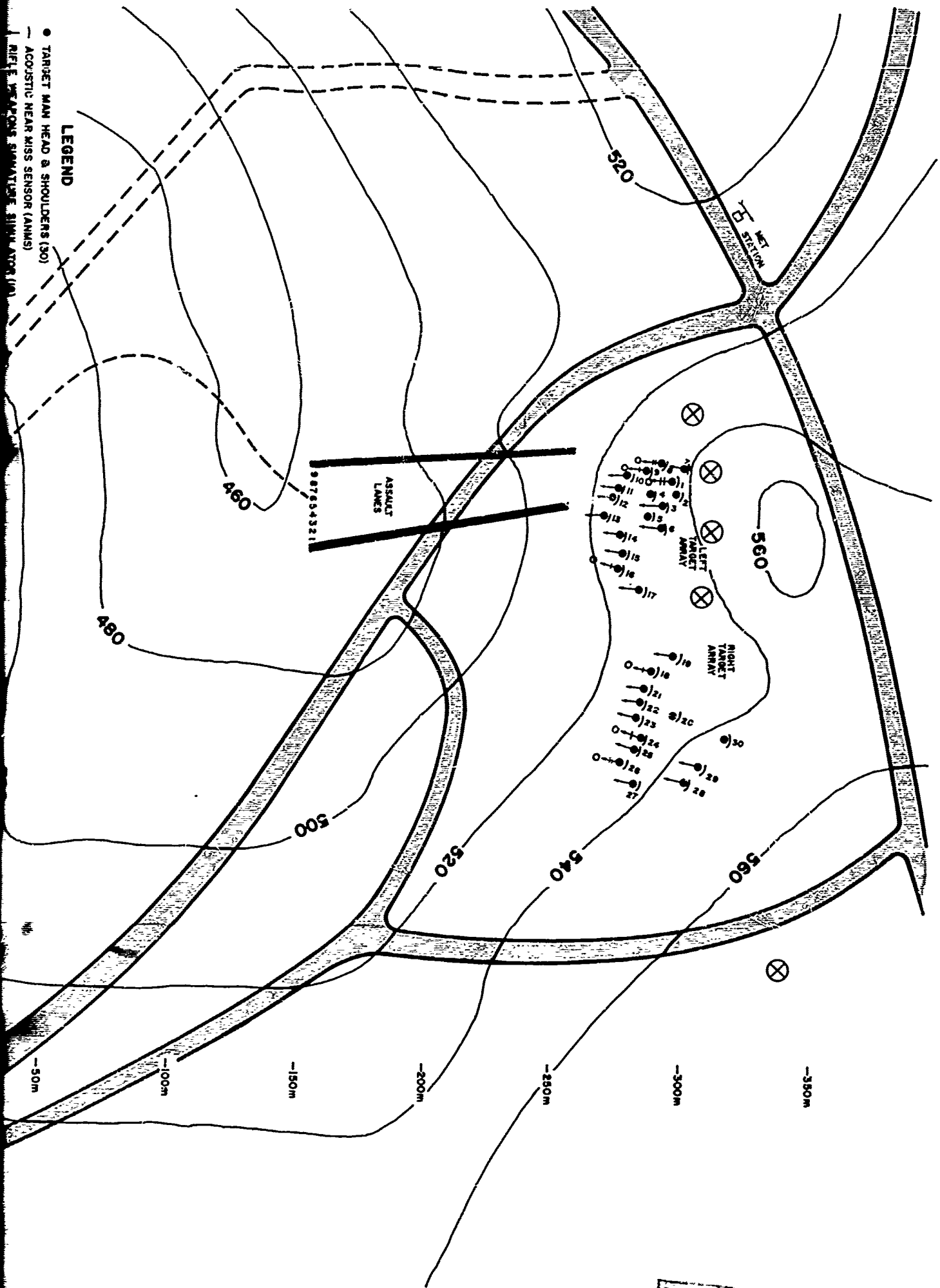


RANGE A

SCALE IN METERS

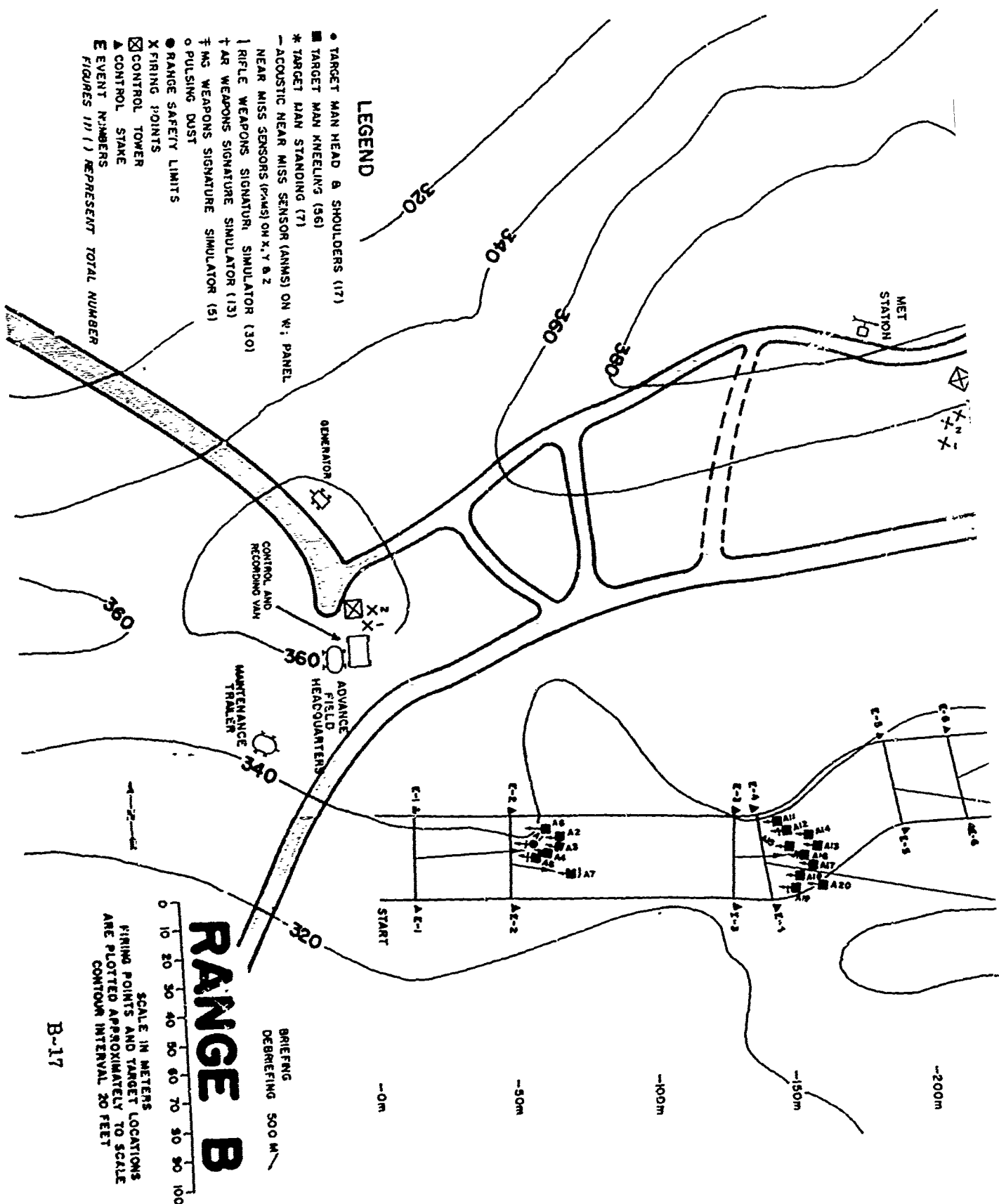
FIRING POINTS AND TARGET LOCATIONS
ARE PLOTTED APPROXIMATELY TO SCALE

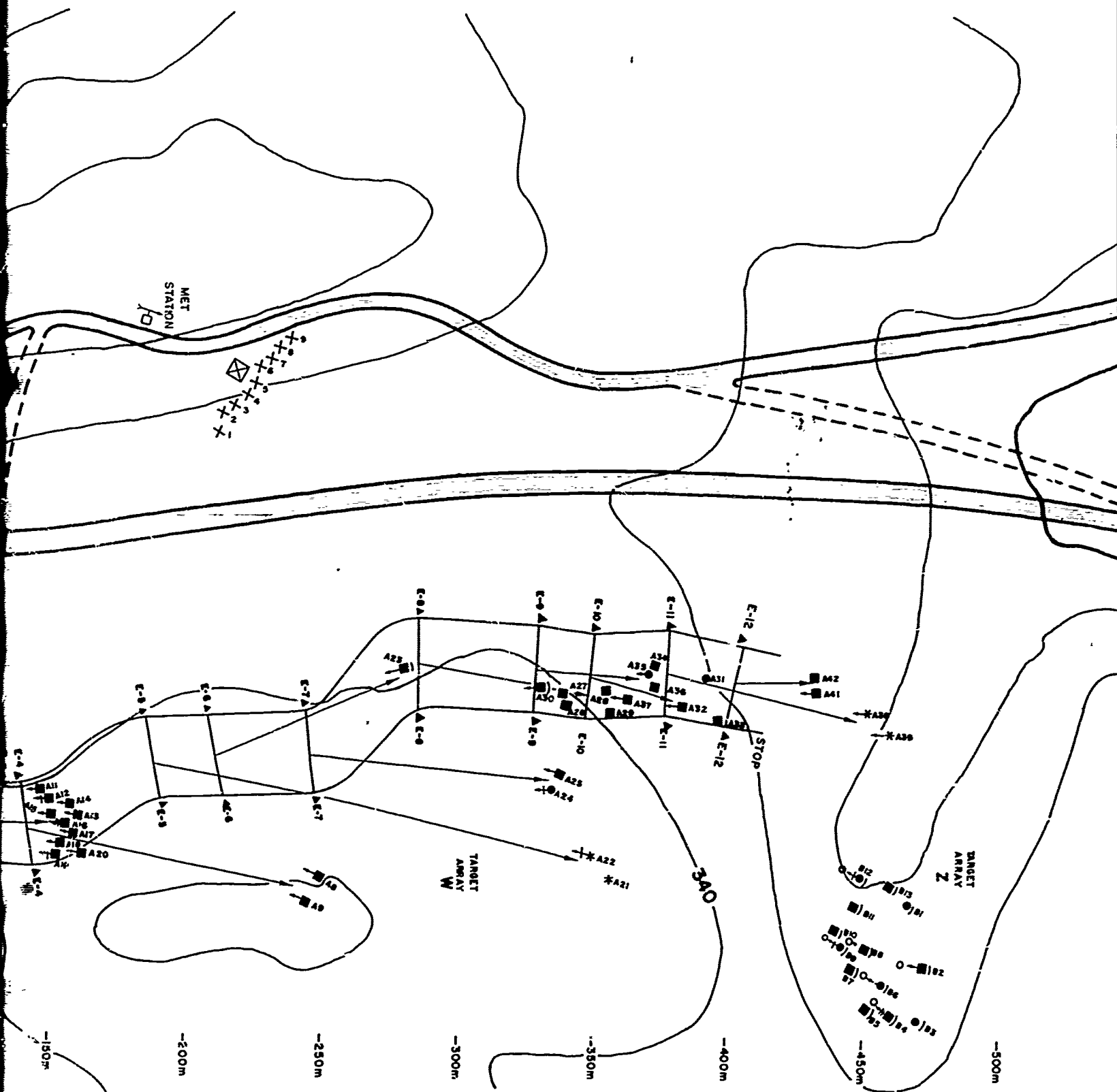
CONTOUR INTERVAL 20 FEET

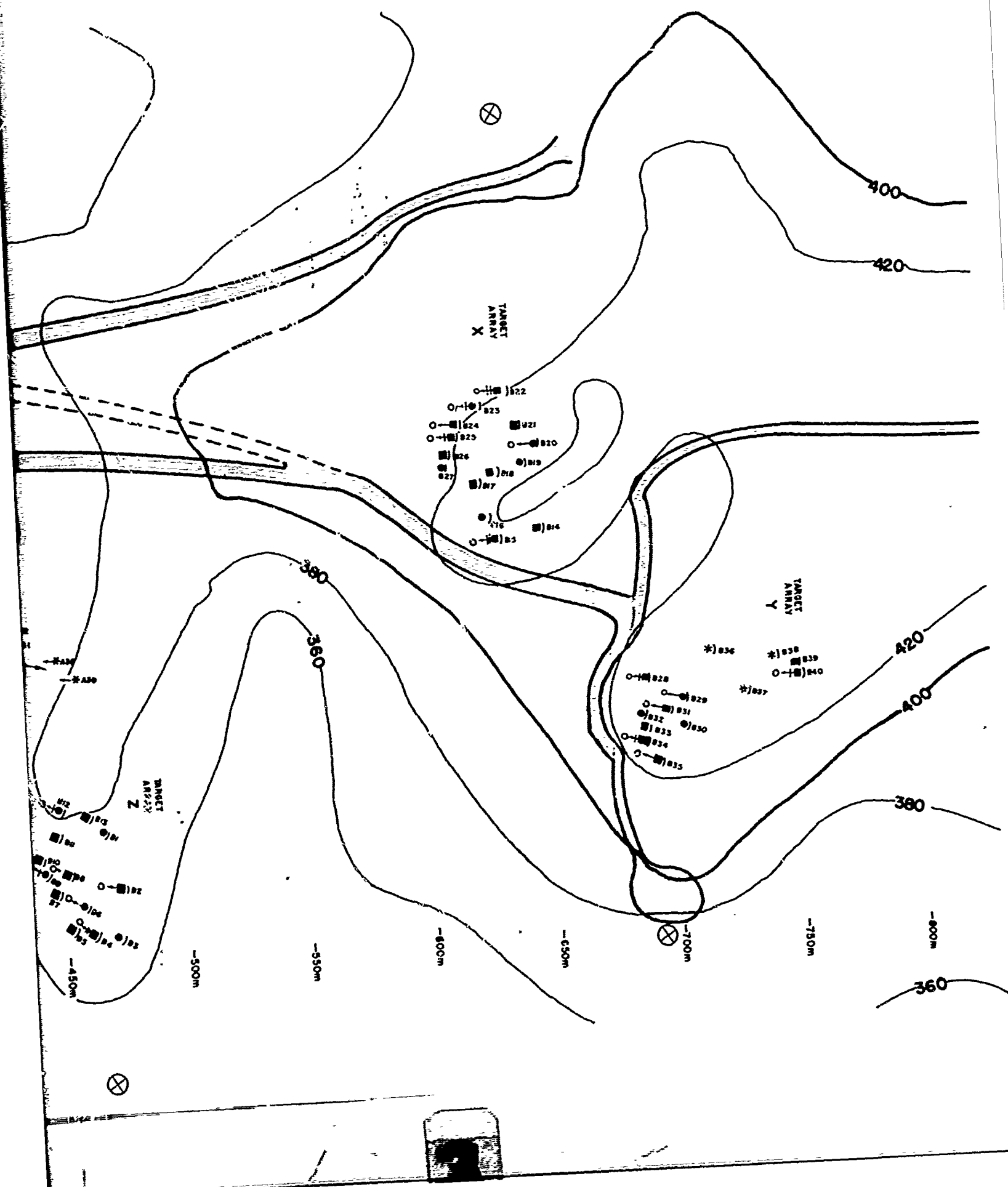


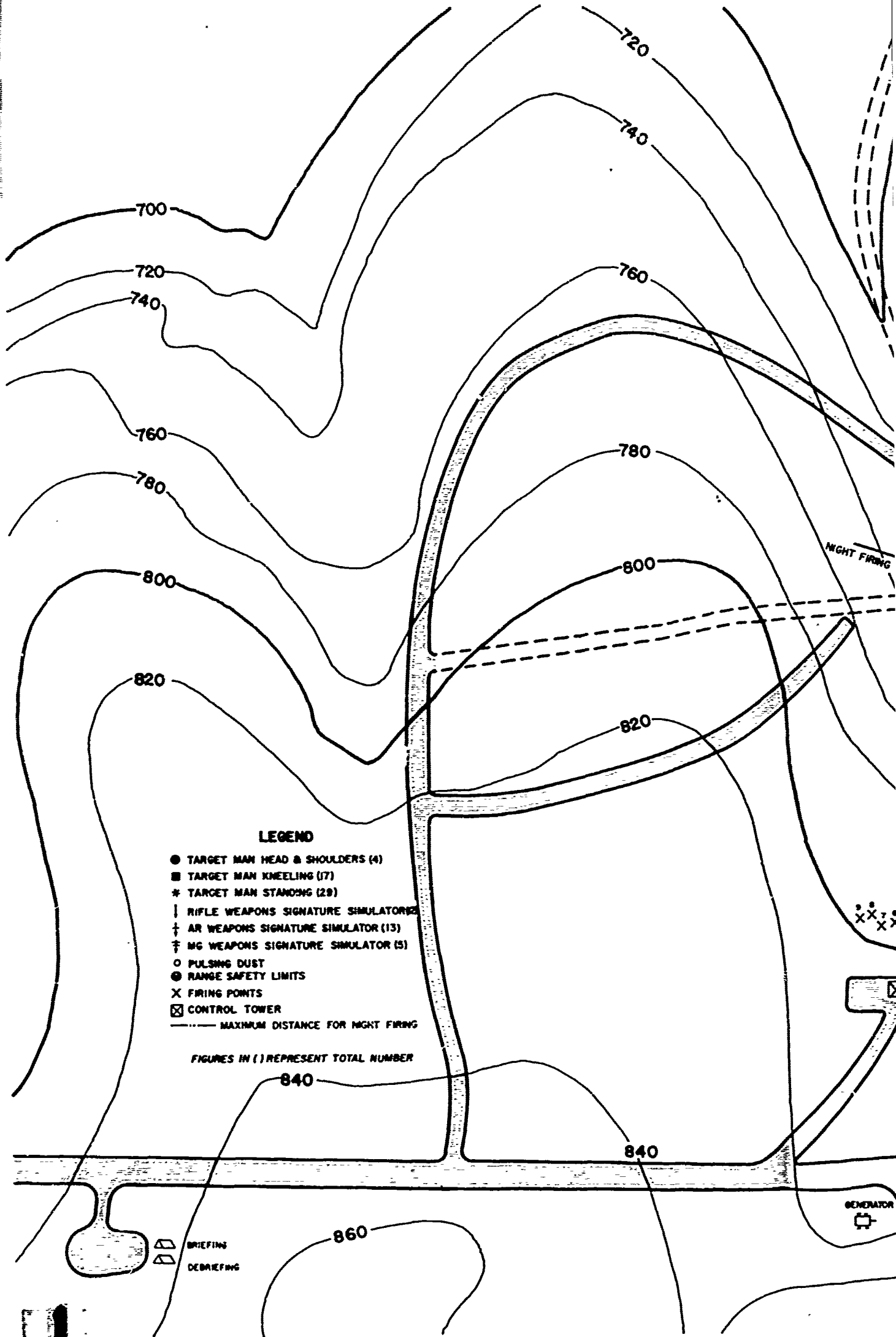
- TARGET MAN HEAD & SHOULDERS (17)
- TARGET MAN KNEELING (56)
- * TARGET MAN STANDING (7)
- ACOUSTIC NEAR MISS SENSOR (ANMS) ON W; PANEL
- NEAR MISS SENSORS (PAMS) ON X, Y & Z
- 1 RIFLE WEAPONS SIGNATURE SIMULATOR (30)
- † AR WEAPONS SIGNATURE SIMULATOR (13)
- ‡ MG WEAPONS SIGNATURE SIMULATOR (5)
- o PULSING DUST
- RANGE SAFETY LIMITS
- X FIRING POINTS
- ☒ CONTROL TOWER
- ▲ CONTROL STAKE
- E EVENT NUMBERS
- FIGURES IN () REPRESENT TOTAL NUMBER

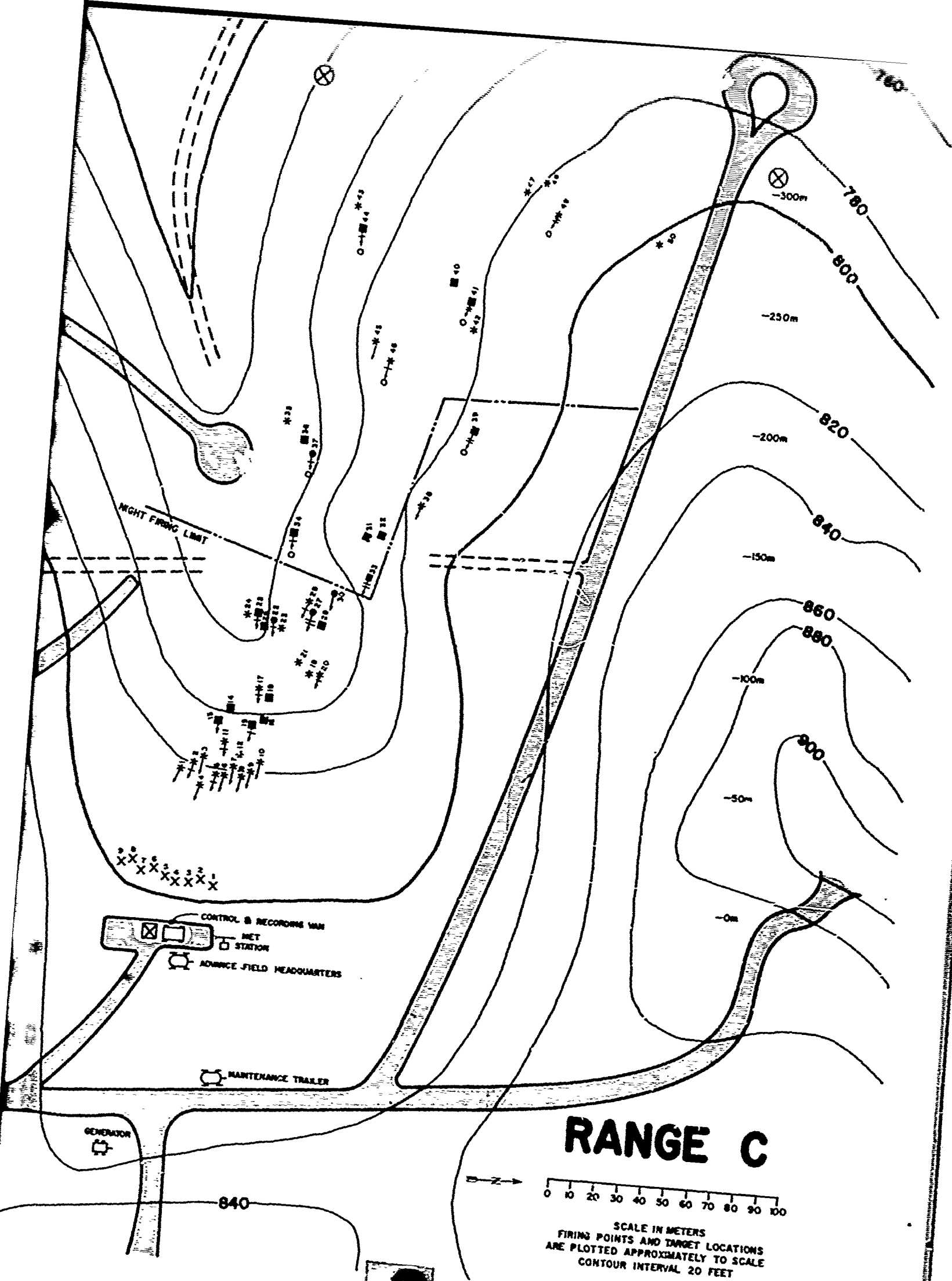
LEGEND



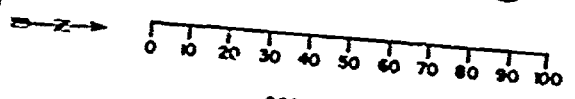








RANGE C



SCALE IN METERS
FIRING POINTS AND TARGET LOCATIONS
ARE PLOTTED APPROXIMATELY TO SCALE
CONTOUR INTERVAL 20 FEET

Appendix 1 to Annex B

HORIZONTAL DISTANCES FROM FIRING POINTS
TO TARGETS

Table B-1

**HORIZONTAL DISTANCE IN METERS FROM FIRING POINTS TO TARGETS
FOR RANGE A, RIFLE SQUAD BASE OF FIRE AND MACHINEGUN
SQUAD IN FIRE SUPPORT OF ASSAULT****

| Target No. | Left Target Array | | | | | | | | | Target No. | Right Target Array | | | | | | | | |
|---------------|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|---------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| | Firing Point | | | | | | | | | | Firing Point | | | | | | | | |
| | 1 | 2 | 3* | 4 | 5 | 6 | 7* | 8 | 9 | | 1 | 2 | 3* | 4 | 5 | 6 | 7* | 8 | 9 |
| 1 | 309 | 307 | 298 | 308 | 298 | 292 | 294 | 287 | 293 | 18 | 297 | 292 | 289 | 292 | 292 | 288 | 292 | 285 | 293 |
| 2 | 310 | 304 | 300 | 302 | 300 | 294 | 296 | 289 | 295 | 19 | 305 | 300 | 297 | 300 | 300 | 296 | 299 | 292 | 300 |
| 3 | 306 | 298 | 295 | 297 | 295 | 289 | 292 | 285 | 291 | 20 | 305 | 299 | 297 | 301 | 301 | 297 | 301 | 295 | 303 |
| 4 | 300 | 294 | 290 | 292 | 290 | 283 | 287 | 279 | 285 | 21 | 295 | 290 | 287 | 291 | 291 | 287 | 291 | 284 | 292 |
| 5 | 301 | 294 | 291 | 293 | 297 | 289 | 288 | 281 | 290 | 22 | 292 | 287 | 285 | 288 | 288 | 285 | 289 | 283 | 290 |
| 6 | 304 | 299 | 293 | 295 | 294 | 289 | 291 | 284 | 290 | 23 | 291 | 286 | 284 | 287 | 285 | 284 | 288 | 282 | 290 |
| 7 | 317 | 211 | 307 | 308 | 307 | 301 | 303 | 295 | 301 | 24 | 294 | 289 | 287 | 290 | 291 | 288 | 297 | 286 | 294 |
| 8 | 310 | 303 | 299 | 301 | 299 | 293 | 295 | 287 | 293 | 25 | 292 | 287 | 285 | 288 | 289 | 286 | 290 | 284 | 292 |
| 9 | 302 | 296 | 292 | 295 | 291 | 286 | 287 | 284 | 286 | 26 | 288 | 283 | 281 | 285 | 285 | 282 | 287 | 281 | 289 |
| 10 | 295 | 288 | 285 | 286 | 284 | 279 | 280 | 273 | 279 | 27 | 298 | 293 | 291 | 295 | 296 | 293 | 298 | 292 | 300 |
| 11 | 289 | 283 | 279 | 280 | 279 | 273 | 275 | 267 | 274 | 28 | 310 | 307 | 304 | 307 | 308 | 305 | 310 | 304 | 312 |
| 12 | 286 | 280 | 276 | 278 | 276 | 271 | 273 | 265 | 271 | 29 | 316 | 312 | 309 | 313 | 313 | 311 | 314 | 309 | 317 |
| 13 | 284 | 278 | 274 | 276 | 274 | 269 | 271 | 263 | 270 | 30 | 326 | 322 | 320 | 323 | 323 | 320 | 324 | 318 | 326 |
| 14 | 285 | 274 | 275 | 277 | 276 | 271 | 273 | 265 | 272 | | | | | | | | | | |
| 15 | 287 | 281 | 278 | 280 | 279 | 274 | 276 | 269 | 276 | | | | | | | | | | |
| 16 | 284 | 278 | 275 | 277 | 276 | 272 | 274 | 266 | 273 | | | | | | | | | | |
| 17 | 292 | 286 | 283 | 286 | 285 | 280 | 283 | 276 | 283 | | | | | | | | | | |

* Firing point for automatic rifle, bipod and tripod mounted machineguns, and for the rifleman serving in the automatic rifleman's role in the rifle squad with nine rifles

** Based on plotted rather than computed data

**HORIZONTAL DISTANCE IN METERS FROM FIRING POINTS TO TARGETS BY
EVENT FOR RANGE B, RIFLE SQUAD IN APPROACH TO CONTACT****

Target A40 not used

Table B-3

HORIZONTAL DISTANCE IN METERS FROM FIRING POINTS TO TARGET FOR
RANGE B, RIFLE SQUAD BASE OF FIRE SUPPORTING THE ADVANCE**

| Target No. | Target Array X | | | | | | | | | Target No. | Target Array Y | | | | | | | | |
|---------------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|---------------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|
| | Firing Point | | | | | | | | | | Firing Point | | | | | | | | |
| | 1 | 2 | 3* | 4 | 5 | 6 | 7* | 8 | 9 | | 1 | 2 | 3* | 4 | 5 | 6 | 7* | 8 | 9 |
| B14 | 445 | 440 | 440 | 436 | 435 | 434 | 430 | 428 | 420 | B28 | 498 | 495 | 495 | 485 | 495 | 485 | 486 | 479 | 477 |
| B15 | 422 | 428 | 418 | 420 | 413 | 417 | 407 | 412 | 404 | B29 | 515 | 510 | 510 | 508 | 502 | 506 | 503 | 498 | 492 |
| B16 | 418 | 420 | 413 | 408 | 408 | 407 | 403 | 400 | 399 | B30 | 518 | 513 | 514 | 510 | 510 | 510 | 505 | 505 | 502 |
| B17 | 412 | 413 | 408 | 403 | 402 | 401 | 396 | 395 | 393 | B31 | 509 | 506 | 505 | 503 | 495 | 495 | 498 | 496 | 488 |
| B18 | 420 | 422 | 415 | 411 | 410 | 408 | 404 | 402 | 400 | B32 | 494 | 498 | 497 | 487 | 487 | 487 | 489 | 486 | 480 |
| B19 | 436 | 431 | 431 | 427 | 425 | 424 | 420 | 417 | 414 | B33 | 501 | 500 | 500 | 495 | 490 | 494 | 486 | 490 | 488 |
| B20 | 441 | 438 | 437 | 433 | 425 | 424 | 425 | 424 | 419 | B34 | 503 | 500 | 500 | 497 | 490 | 495 | 492 | 491 | 489 |
| B21 | 430 | 431 | 430 | 425 | 418 | 417 | 412 | 410 | 407 | B35 | 510 | 507 | 508 | 497 | 503 | 504 | 500 | 499 | 491 |
| B22 | 425 | 426 | 419 | 414 | 413 | 411 | 406 | 404 | 401 | B36 | 516 | 516 | 513 | 515 | 508 | 508 | 509 | 507 | 500 |
| B23 | 413 | 413 | 407 | 401 | 401 | 399 | 395 | 392 | 390 | B37 | 537 | 537 | 535 | 530 | 524 | 524 | 526 | 525 | 516 |
| B24 | 416 | 407 | 400 | 395 | 394 | 392 | 388 | 385 | 383 | B38 | 541 | 541 | 538 | 539 | 534 | 532 | 528 | 526 | 525 |
| B25 | 403 | 405 | 397 | 393 | 391 | 390 | 385 | 385 | 381 | B39 | 556 | 557 | 553 | 550 | 542 | 541 | 537 | 535 | 534 |
| B26 | 401 | 402 | 395 | 391 | 396 | 388 | 383 | 382 | 380 | B40 | 560 | 560 | 550 | 551 | 550 | 544 | 540 | 539 | 536 |
| B27 | 400 | 402 | 395 | 390 | 389 | 388 | 382 | 381 | 379 | | | | | | | | | | |

* Firing point for automatic rifle, bipod and tripod mount machineguns, and for the rifleman serving in the automatic rifleman's role in the rifle squad with nine rifles.

** Based on plotted rather than computed data.

Table B-4

HORIZONTAL DISTANCE IN METERS FROM FIRING POINTS TO TARGETS
FOR RANGE B, MACHINEGUN SQUAD IN FIRE SUPPORT OF ADVANCE
TARGET ARRAYS X, Y, AND Z*

| Target No. | MG 1 | MG 2 | Target No. | MG 1 | MG 2 |
|------------|------|------|------------|------|------|
| B1 | 468 | 472 | B21 | 640 | 640 |
| B2 | 480 | 488 | B22 | 635 | 630 |
| B3 | 482 | 486 | B23 | 624 | 623 |
| B4 | 473 | 477 | B24 | 616 | 615 |
| B5 | 469 | 467 | B25 | 613 | 612 |
| B6 | 466 | 470 | B26 | 609 | 608 |
| B7 | 457 | 458 | B27 | 603 | 607 |
| B8 | 458 | 460 | B28 | 690 | 691 |
| B9 | 450 | 453 | B29 | 705 | 707 |
| B10 | 446 | 449 | B30 | 707 | 708 |
| B11 | 450 | 453 | B31 | 699 | 700 |
| B12 | 449 | 452 | B32 | 690 | 690 |
| B13 | 465 | 468 | B33 | 691 | 693 |
| B14 | 645 | 645 | B34 | 690 | 693 |
| B15 | 627 | 628 | B35 | 697 | 699 |
| B16 | 622 | 626 | B36 | 715 | 716 |
| B17 | 620 | 620 | B37 | 730 | 730 |
| B18 | 629 | 630 | B38 | 740 | 736 |
| B19 | 640 | 639 | B39 | 750 | 750 |
| B20 | 646 | 645 | B40 | 752 | 753 |

* Based on plotted rather than computed data

Table B-5:
HORIZONTAL DISTANCE IN METERS FROM FIRING POINTS
TO TARGETS FOR RANGE C,
DEFENSE AGAINST ATTACK**

| Target No. | Firing Points | | | | | | | | | Target No. | Firing Points | | | | | | | | |
|------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|
| | 1 | 2 | 3 | 4* | 5 | 6 | 7* | 8 | 9 | | 1 | 2 | 3 | 4* | 5 | 6 | 7* | 8 | 9 |
| 1 | 50 | 46 | 44 | 48 | 46 | 43 | 47 | 44 | 47 | 26 | 110 | 109 | 109 | 114 | 113 | 111 | 115 | 112 | 115 |
| 2 | 52 | 49 | 48 | 50 | 49 | 47 | 51 | 48 | 51 | 27 | 121 | 120 | 121 | 126 | 126 | 126 | 131 | 128 | 131 |
| 3 | 53 | 51 | 49 | 53 | 52 | 50 | 54 | 52 | 55 | 28 | 118 | 117 | 118 | 123 | 123 | 121 | 128 | 125 | 128 |
| 4 | 46 | 46 | 44 | 48 | 48 | 46 | 51 | 48 | 52 | 29 | 129 | 124 | 125 | 130 | 130 | 129 | 134 | 131 | 134 |
| 5 | 46 | 45 | 44 | 47 | 48 | 46 | 51 | 49 | 55 | 30 | 131 | 131 | 132 | 138 | 138 | 137 | 142 | 140 | 142 |
| 6 | 45 | 43 | 43 | 48 | 48 | 47 | 53 | 50 | 54 | 31 | 159 | 159 | 160 | 165 | 165 | 165 | 170 | 167 | 170 |
| 7 | 50 | 49 | 49 | 54 | 54 | 54 | 60 | 58 | 61 | 32 | 169 | 164 | 165 | 170 | 170 | 170 | 178 | 175 | 178 |
| 8 | 45 | 45 | 46 | 51 | 52 | 52 | 58 | 57 | 60 | 33 | 146 | 146 | 147 | 152 | 151 | 151 | 158 | 156 | 159 |
| 9 | 49 | 49 | 50 | 56 | 57 | 57 | 62 | 62 | 65 | 34 | 150 | 149 | 149 | 153 | 152 | 150 | 154 | 151 | 154 |
| 10 | 55 | 55 | 56 | 62 | 63 | 64 | 70 | 68 | 72 | 35 | 195 | 195 | 194 | 198 | 196 | 194 | 197 | 198 | 196 |
| 11 | 60 | 59 | 58 | 62 | 61 | 60 | 65 | 63 | 65 | 36 | 189 | 188 | 188 | 192 | 191 | 188 | 192 | 188 | 191 |
| 12 | 56 | 55 | 57 | 60 | 60 | 60 | 65 | 64 | 66 | 37 | 184 | 183 | 183 | 187 | 186 | 184 | 188 | 184 | 187 |
| 13 | 69 | 68 | 67 | 70 | 70 | 67 | 72 | 69 | 72 | 38 | 181 | 182 | 183 | 189 | 189 | 188 | 197 | 192 | 195 |
| 14 | 73 | 72 | 71 | 76 | 75 | 73 | 77 | 75 | 77 | 39 | 219 | 219 | 221 | 226 | 227 | 226 | 234 | 229 | 232 |
| 15 | 69 | 69 | 69 | 74 | 74 | 73 | 79 | 77 | 80 | 40 | 270 | 270 | 271 | 276 | 276 | 271 | 279 | 276 | 278 |
| 16 | 71 | 71 | 72 | 77 | 77 | 77 | 82 | 80 | 84 | 41 | 265 | 265 | 266 | 270 | 271 | 270 | 274 | 271 | 274 |
| 17 | 84 | 83 | 84 | 88 | 88 | 87 | 92 | 90 | 92 | 42 | 257 | 257 | 258 | 264 | 263 | 262 | 267 | 264 | 267 |
| 18 | 81 | 80 | 81 | 86 | 86 | 86 | 90 | 88 | 91 | 43 | 288 | 287 | 287 | 291 | 290 | 287 | 291 | 287 | 289 |
| 19 | 98 | 98 | 100 | 105 | 106 | 106 | 111 | 109 | 112 | 44 | 279 | 278 | 277 | 282 | 281 | 278 | 282 | 278 | 280 |
| 20 | 99 | 99 | 101 | 106 | 107 | 106 | 113 | 111 | 114 | 45 | 236 | 235 | 236 | 240 | 240 | 239 | 242 | 238 | 241 |
| 21 | 100 | 101 | 102 | 107 | 107 | 107 | 112 | 110 | 113 | 46 | 230 | 229 | 230 | 234 | 234 | 231 | 236 | 233 | 236 |
| 22 | 112 | 112 | 112 | 116 | 116 | 113 | 119 | 115 | 118 | 47 | 318 | 318 | 318 | 323 | 323 | 322 | 327 | 328 | 327 |
| 23 | 111 | 110 | 111 | 116 | 115 | 114 | 118 | 115 | 118 | 48 | 325 | 326 | 327 | 327 | 322 | 330 | 336 | 332 | 335 |
| 24 | 114 | 113 | 112 | 116 | 116 | 113 | 117 | 114 | 116 | 49 | 315 | 315 | 316 | 321 | 322 | 320 | 325 | 323 | 326 |
| 25 | 114 | 113 | 113 | 117 | 116 | 114 | 118 | 115 | 117 | 50 | 328 | 330 | 331 | 337 | 338 | 338 | 344 | 341 | 344 |

* Firing point for automatic rifle, bipod and tripod mounted machineguns, and for the rifleman serving in the automatic rifleman's role in the rifle squad with nine rifles.

** Based on plotted rather than computed data.

Appendix 2 to Annex B

TARGET SURVEY DATA

Table B-6
SURVEY DATA FOR LEFT TARGET ARRAY
RANGE A, ASSAULT AGAINST DE FENSE

| Target Number | Grid Coordinates | | Altitude (feet MSL) |
|------------------|------------------|----------|------------------------|
| | Easting | Northing | |
| 1 | 07574.08 | 48916.19 | 537.95 |
| 2 | 07577.96 | 48918.75 | 538.92 |
| 3 | 07584.48 | 48915.97 | 536.28 |
| 4 | 07580.51 | 48909.64 | 533.65 |
| 5 | 07587.04 | 48911.45 | 534.64 |
| 6 | 07591.01 | 48914.40 | 535.95 |
| 7 | 07570.60 | 48922.30 | 538.90 |
| 8 | 07568.43 | 48916.16 | 533.98 |
| 9 | 07571.30 | 48909.13 | 531.36 |
| 10 | 07573.14 | 48902.98 | 528.08 |
| 11 | 07577.27 | 48897.10 | 526.11 |
| 12 | 07581.54 | 48895.26 | 525.70 |
| 13 | 07588.37 | 48894.45 | 525.12 |
| 14 | 07595.52 | 48896.52 | 526.76 |
| 15 | 07601.25 | 48899.78 | 528.40 |
| 16 | 07607.89 | 48897.52 | 527.09 |
| 17 | 07614.82 | 48906.96 | 531.68 |

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Table B-7
SURVEY DATA FOR RIGHT TARGET ARRAY
RANGE A, ASSAULT AGAINST DEFENSE

| Target Number | Grid Coordinates | | Altitude (feet MSL) |
|---------------|------------------|----------|---------------------|
| | Easting | Northing | |
| 18 | 07647.14 | 48912.51 | 529.06 |
| 19 | 07641.09 | 48920.48 | 533.00 |
| 20 | 07662.27 | 48918.72 | 536.60 |
| 21 | 07652.92 | 48910.67 | 530.70 |
| 22 | 07658.35 | 48907.08 | 530.04 |
| 23 | 07664.58 | 48905.52 | 529.06 |
| 24 | 07670.76 | 48907.87 | 532.67 |
| 25 | 07676.30 | 48904.97 | 533.00 |
| 26 | 07679.75 | 48900.08 | 531.36 |
| 27 | 07689.43 | 48908.99 | 539.56 |
| 28 | 07686.43 | 48922.20 | 545.13 |
| 29 | 07683.68 | 48928.06 | 546.10 |
| 30 | 07671.71 | 48940.55 | 551.08 |

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Table B-3

**SURVEY DATA ON FIRING POSITIONS FOR RANGE A,
RIFLE SQUAD BASE OF FIRE AND MACHINEGUN FIRE
SUPPORT OF THE ASSAULT**

| Firing Position Number | Grid Coordinates | | Altitude (feet MSL) |
|------------------------------|------------------|----------|------------------------|
| | Easting | Northing | |
| 1 | 07641.55 | 48612.40 | 517.91 |
| 2 | 07635.77 | 48618.48 | 515.28 |
| 3 * | 07630.57 | 48622.08 | 512.99 |
| 4 | 07624.93 | 48620.39 | 512.99 |
| 5 | 07618.53 | 48619.91 | 512.32 |
| 6 | 07611.19 | 48625.40 | 509.38 |
| 7 * | 07604.89 | 48622.20 | 509.61 |
| 8 | 07598.71 | 48628.30 | 506.43 |
| 9 | 07592.92 | 48623.09 | 510.04 |

* Firing point for automatic rifle, bipod and tripod mounted machineguns, and for the rifleman serving in the automatic rifleman's role in the rifle squad with nine rifles.

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Table B-9
SURVEY DATA FOR TARGET ARRAYS W, X, Y, Z
FOR RANGE B, ATTACK
AGAINST DELAYING ACTION

| Target Number | Grid Coordinates | | Altitude (feet MSL) |
|-----------------------|------------------|----------|---------------------|
| | Easting | Northing | |
| <u>Target Array W</u> | | | |
| A1 | 05482.58 | 51378.50 | 339.15 |
| A2 | 05490.36 | 51379.97 | 338.16 |
| A3 | 05489.87 | 51378.21 | 337.49 |
| A4 | 05486.72 | 51375.24 | 336.16 |
| A5 | 05484.17 | 51373.63 | 335.85 |
| A6 | 05487.95 | 51381.39 | 338.82 |
| A7 | 05494.01 | 51369.15 | 329.96 |
| A8 | 05669.28 | 51355.52 | 326.03 |
| A9 | 05665.67 | 51344.57 | 324.05 |
| A11 | 05570.20 | 51381.13 | 339.98 |
| A12 | 05573.23 | 51379.34 | 336.85 |
| A13 | 05582.10 | 51375.33 | 333.92 |
| A14 | 05579.29 | 51376.53 | 334.23 |
| A15 | 05575.01 | 51372.85 | 333.23 |
| A16 | 05577.15 | 51373.58 | 332.24 |
| A17 | 05579.49 | 51368.25 | 331.93 |
| A18 | 05577.68 | 51365.01 | 331.28 |
| A19 | 05576.60 | 51361.61 | 329.96 |
| A20 | 05585.63 | 51362.06 | 328.98 |
| A21 | 05778.01 | 51355.48 | 333.24 |
| A22 | 05771.84 | 51361.07 | 333.18 |
| A23 | 05704.65 | 51427.05 | 343.42 |
| A24 | 05758.29 | 51385.98 | 332.92 |
| A25 | 05760.29 | 51391.44 | 333.90 |

Table B-9
 SURVEY DATA FOR TARGET ARRAYS W, X, Y, Z
 FOR RANGE B, ATTACK
 AGAINST DELAYING ACTION
 (Continued)

| Target Number | Grid Coordinates | | Altitude (feet MSL) |
|-----------------------|------------------|----------|---------------------|
| | Easting | Northing | |
| A26 | 05763.01 | 51417.34 | 339.48 |
| A27 | 05761.39 | 51419.98 | 339.80 |
| A28 | 05777.73 | 51423.87 | 345.71 |
| A29 | 05778.59 | 51414.32 | 343.07 |
| A30 | 05754.28 | 51421.96 | 338.16 |
| A31 | 05815.52 | 51424.68 | 360.14 |
| A32 | 05806.27 | 51417.49 | 354.89 |
| A33 | 05819.15 | 51411.60 | 358.17 |
| A34 | 05794.12 | 51428.72 | 348.99 |
| A35 | 05791.74 | 51426.10 | 347.68 |
| A36 | 05795.73 | 51423.15 | 347.36 |
| A37 | 05784.60 | 51418.07 | 345.05 |
| A38 | 05873.50 | 51412.65 | 375.23 |
| A39 | 05881.05 | 51406.19 | 376.21 |
| A41 | 05855.96 | 51422.54 | 369.98 |
| A42 | 05854.92 | 51425.73 | 370.14 |
| <u>Target Array Z</u> | | | |
| B1 | 05888.72 | 51345.00 | 378.18 |
| B2 | 05896.92 | 51323.19 | 370.31 |
| B3 | 05892.47 | 51304.26 | 365.72 |
| B4 | 05883.31 | 51305.56 | 364.41 |
| B5 | 05875.99 | 51310.47 | 367.03 |
| B6 | 05879.40 | 51316.70 | 367.69 |
| B7 | 05869.42 | 51322.66 | 371.62 |
| B8 | 05873.14 | 51331.22 | 373.59 |

Table B-9.
SURVEY DATA FOR TARGET ARRAYS W,X,Y,Z
FOR RANGE B, ATTACK
AGAINST DELAYING ACTION
(Continued)

| Target Number | Grid Coordinates | | Altitude (feet MSL) |
|------------------------------|------------------|----------|------------------------|
| | Easting | Northing | |
| B9 | 05869.67 | 51334.49 | 375.23 |
| B10 | 05863.49 | 51336.24 | 375.23 |
| B11 | 05869.00 | 51345.25 | 378.51 |
| B12 | 05872.32 | 51355.08 | 383.10 |
| B13 | 05876.99 | 51353.98 | 379.17 |
| <u>Target Array X</u> | | | |
| B14 | 06071.60 | 51457.55 | 434.93 |
| B15 | 06053.52 | 51453.07 | 430.34 |
| B16 | 06051.22 | 51463.87 | 439.52 |
| B17 | 06046.93 | 51473.98 | 430.66 |
| B18 | 06054.86 | 51480.67 | 432.96 |
| B19 | 06063.91 | 51483.47 | 436.90 |
| B20 | 06071.74 | 51491.49 | 433.62 |
| B21 | 06065.01 | 51498.72 | 432.30 |
| B22 | 06061.02 | 51513.34 | 420.50 |
| B23 | 06048.11 | 51506.59 | 419.84 |
| B24 | 06041.00 | 51500.87 | 418.53 |
| B25 | 06037.93 | 51494.87 | 419.18 |
| B26 | 06035.84 | 51488.24 | 416.72 |
| <u>Target Array Y</u> | | | |
| B27 | 06034.58 | 51483.55 | 414.10 |
| B28 | 06113.98 | 51396.36 | 429.68 |
| B29 | 06127.37 | 51388.20 | 433.94 |
| B30 | 06127.10 | 51377.02 | 432.30 |

Table B-9
 SURVEY DATA FOR TARGET ARRAYS W,X,Y,Z
 FOR RANGE B, ATTACK
 AGAINST DELAYING ACTION
 (Concluded)

| Target Number | Grid Coordinates | | Altitude (feet MSL) |
|------------------|------------------|----------|------------------------|
| | Easting | Northing | |
| B31 | 06121.39 | 51383.67 | 431.65 |
| B32 | 06112.42 | 51381.83 | 428.04 |
| B33 | 06113.26 | 51376.43 | 427.38 |
| B34 | 06111.69 | 51371.19 | 425.09 |
| B35 | 06116.08 | 51362.69 | 425.09 |
| B36 | 06141.31 | 51406.18 | 429.02 |
| B37 | 06153.52 | 51391.82 | 432.63 |
| B38 | 06166.56 | 51403.75 | 433.29 |
| B39 | 06174.16 | 51399.28 | 436.57 |
| B40 | 06176.03 | 51396.01 | 436.57 |

Table B-10

**SURVEY DATA FOR RIFLE SQUAD BASE OF FIRE AND
MACHINEGUN FIRE SUPPORT FIRING POSITIONS FOR
RANGE B, ATTACK AGAINST DELAYING ACTION**

| Target Position Number | Grid Coordinates | | Altitude (feet MSL) |
|------------------------------|------------------|----------|------------------------|
| | Easting | Northing | |
| <u>Firing</u> | | | |
| 1 | 05634.59 | 51511.52 | 347.02 |
| 2 | 05633.68 | 51518.11 | 349.65 |
| 3 | 05641.01 | 51521.43 | 352.60 |
| 4 | 05646.07 | 51524.21 | 354.57 |
| 5 | 05647.71 | 51529.19 | 357.52 |
| 6 | 05650.46 | 51534.18 | 361.13 |
| 7 | 05654.40 | 51537.68 | 361.78 |
| 8 | 05657.01 | 51541.07 | 362.77 |
| 9 | 05659.32 | 51544.91 | 363.42 |
| <u>Machinegun</u> | | | |
| 1 | 05432.25 | 51454.85 | 376.54 |
| 2 | 05431.55 | 51464.75 | 377.86 |

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Table B-11

**SURVEY DATA FOR RANGE B,
RIFLE SQUAD IN APPROACH TO CONTACT**

| Side of Event Line | Easting | Northing | Altitude (feet MSL) |
|-------------------------------|----------------|-----------------|--------------------------------|
| <u>Left</u> | | | |
| 1 | 05440.72 | 51390.13 | 347.35 |
| 2 | 05475.19 | 51388.93 | 344.73 |
| 3 | 05555.49 | 51385.95 | 342.43 |
| 4 | 05563.38 | 51386.76 | 314.12 |
| 5 | 05608.08 | 51410.65 | 341.12 |
| 6 | 05630.82 | 51411.55 | 340.79 |
| 7 | 05667.21 | 51412.98 | 339.81 |
| 8 | 05708.57 | 51444.41 | 346.04 |
| 9 | 05752.93 | 51442.33 | 344.40 |
| 10 | 05773.77 | 51441.37 | 347.68 |
| 11 | 05801.04 | 51443.06 | 348.32 |
| 12 | 05828.07 | 51437.81 | 358.14 |
| <u>Right</u> | | | |
| 1 | 05439.09 | 51360.27 | 323.58 |
| 2 | 05473.79 | 51359.08 | 330.95 |
| 3 | 05552.96 | 51356.53 | 332.26 |
| 4 | 05567.70 | 51356.07 | 331.28 |
| 5 | 05614.86 | 51381.17 | 331.61 |
| 6 | 05637.50 | 51381.99 | 331.28 |
| 7 | 05669.99 | 51383.14 | 332.26 |
| 8 | 05708.81 | 51414.42 | 340.79 |
| 9 | 05750.65 | 51412.93 | 342.76 |
| 10 | 05770.34 | 51412.23 | 340.79 |
| 11 | 05798.83 | 51411.22 | 344.40 |
| 12 | 05822.33 | 51410.38 | 358.83 |

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Table B-12
SURVEY DATA FOR TARGET ARRAY RANGE C,
DEFENSE AGAINST ATTACK

| Target Number | Grid Coordinates | | Altitude (feet MSL) |
|------------------|------------------|----------|------------------------|
| | Easting | Northing | |
| 1 | 11558.65 | 50550.99 | 782.6 |
| 2 | 11556.51 | 50553.95 | 771.0 |
| 3 | 11555.78 | 50558.35 | 769.5 |
| 4 | 11559.52 | 50560.42 | 771.7 |
| 5 | 11560.28 | 50562.55 | 782.6 |
| 6 | 11561.69 | 50565.74 | 782.6 |
| 7 | 11557.67 | 50571.22 | 771.7 |
| 8 | 11562.18 | 50575.74 | 774.3 |
| 9 | 11558.71 | 50579.67 | 782.6 |
| 10 | 11554.24 | 50583.07 | 771.7 |
| 11 | 11546.80 | 50567.10 | 765.3 |
| 12 | 11551.93 | 50572.93 | 766.4 |
| 13 | 11537.21 | 50563.45 | 761.2 |
| 14 | 11533.57 | 50567.81 | 758.9 |
| 15 | 11538.51 | 50578.88 | 762.1 |
| 16 | 11537.79 | 50583.37 | 762.1 |
| 17 | 11524.52 | 50580.72 | 751.3 |
| 18 | 11528.38 | 50584.72 | 752.6 |
| 19 | 11515.84 | 50602.23 | 752.3 |
| 20 | 11516.16 | 50605.12 | 752.9 |
| 21 | 11512.84 | 50597.84 | 750.0 |
| 22 | 11495.64 | 50583.92 | 741.1 |
| 23 | 11497.41 | 50586.96 | 741.5 |
| 24 | 11493.86 | 50573.50 | 737.9 |
| 25 | 11494.00 | 50577.19 | 738.2 |

Table B-12

SURVEY DATA FOR TARGET ARRAY RANGE C,
DEFENSE AGAINST ATTACK (Concluded)

| Target Number | Grid Coordinates | | Altitude (feet MSL) |
|------------------|------------------|----------|------------------------|
| | Easting | Northing | |
| 26 | 11497.32 | 50579.00 | 738.7 |
| 27 | 11491.79 | 50601.47 | 746.4 |
| 28 | 11496.37 | 50601.59 | 747.4 |
| 29 | 11487.42 | 50600.45 | 745.4 |
| 30 | 11483.12 | 50609.17 | 753.9 |
| 31 | 11458.21 | 50621.38 | 769.5 |
| 32 | 11455.85 | 50627.95 | 770.9 |
| 33 | 11474.20 | 50623.76 | 769.0 |
| 34 | 11459.86 | 50589.73 | 741.8 |
| 35 | 11412.90 | 50584.22 | 729.3 |
| 36 | 11418.70 | 50590.11 | 733.0 |
| 37 | 11426.49 | 50594.77 | 736.5 |
| 38 | 11443.61 | 50644.07 | 786.2 |
| 39 | 11411.66 | 50664.57 | 785.8 |
| 40 | 11349.89 | 50652.13 | 777.2 |
| 41 | 11358.71 | 50658.16 | 789.8 |
| 42 | 11368.57 | 50661.00 | 778.9 |
| 43 | 11322.07 | 50607.64 | 748.3 |
| 44 | 11331.30 | 50610.12 | 751.3 |
| 45 | 11377.83 | 50619.81 | 769.7 |
| 46 | 11385.74 | 50626.74 | 767.8 |
| 47 | 11310.51 | 50679.62 | 778.9 |
| 48 | 11305.66 | 50688.28 | 821.2 |
| 49 | 11319.34 | 50693.11 | 787.4 |
| 50 | 11326.87 | 50738.70 | 794.3 |

Table B-13
SURVEY DATA FOR RIFLE SQUAD AND MACHINEGUN SQUAD
FIRING POSITIONS FOR RANGE C,
DEFENSE AGAINST ATTACK

| Firing Position | Grid Coordinates | | Altitude (feet MSL) |
|-----------------|------------------|----------|---------------------|
| | Easting | Northing | |
| 1 | 11607.41 | 50566.18 | 793.3 |
| 2 | 11605.79 | 50561.48 | 792.9 |
| 3 | 11604.50 | 50555.88 | 792.9 |
| 4* | 11607.54 | 50550.17 | 792.9 |
| 5 | 11605.13 | 50545.20 | 792.9 |
| 6 | 11601.85 | 50540.13 | 792.9 |
| 7* | 11603.61 | 50533.85 | 792.9 |
| 8 | 11599.30 | 50531.25 | 792.9 |
| 9 | 11599.79 | 50527.27 | 792.9 |

* Firing point for automatic rifle, bipod and tripod mounted machineguns, and for the rifleman serving in the automatic rifleman's role in the rifle squad with nine rifles.

Map Fort Ord and Vicinity
1:25000
Series V895 S

Appendix 3 to Annex B

VISIBILITY DATA

Target effects (timely first hits and near misses) are a function of the ability of each squad first to detect the target and then to engage it with small arms fire. Thus, visual target detection is preliminary to effectively engaging the target. The ability of members of the squad to detect the individual targets of an array depends on:

- 1) Local lighting conditions -- relative position of the sun, cloud cover, and time of day
- 2) Terrain masking -- relative location of firer to individual targets in terms of mutual cover
- 3) Vegetation masking -- the concealment provided by vegetation between the firer and the individual targets
- 4) Visual acuity of the squad members
- 5) Target identification aids employed by the squad once one or more members have detected a target -- for example, the use of tracers
- 6) Simulated aiming cues produced by the target

Runs were scheduled to ensure that the same number of squads from each mix ran each situation at the same time of day, allowing the effects of visibility differences caused by differences in light to be balanced out. Also, to minimize effects of differences in firer-target intervisibility, firers with the same marksmanship capabilities were usually placed in the same positions for each run for each mix.

This appendix provides samples of the visibility data necessary to understand the realism of each of the tactical situations, as to the cover and concealment afforded each target. Visibility data are required input to any meaningful infantry fire fight computer simulation. These visibility data provide the basis for both the terrain and vegetation masking model for tactical situations for which target effects data are also available. These data provide a basis for validation of a computer simulation of the infantry fire fight in the platoon organizational and tactical context as portrayed on the CDCEC SAWS ranges. Such validation of computer simulation is not usually possible since the required masking models and

actual fire effectiveness data are not available as input and as a basis of comparison.

Samples of available visibility data indicating when targets are visible, concealed, or covered are presented in two formats:

- 1) In diagrams for the rifle squad in line assault (Situation 1) from the firer's position to the targets and the reverse
- 2) In tables for the rifle squad in approach to contact (Situation 4) and for the day and night defense against attack (Situations 7, 8, and 9)

The visibility data for the line assault situation were obtained by stationing at each target position a man whose height equaled the height of the target. A man was then moved up in each assault lane in 5-meter increments so that data could be recorded on each squad member's position and on the progressive firer-to-target visibility and target-to-firer visibility, as illustrated in the diagrams in Figures B-5 and B-6. The firer-to-target visibility charts portray the terrain and vegetation masking from the position of each firer as he moves up the assault lanes to one target. The same format is used for the target-to-firer visibility diagrams. Thus, there are two visibility diagrams available for each of 15 engageable targets in the array. Only one sample of each type (Target No. 4) is presented.*

Positions of terrain masking are identified by the shaded area labeled "Covered." In this area, both the target and firer are covered. The unshaded portion of the diagram labeled "Concealed" includes all firing positions from which the target is concealed. Ground locations from which the firer can see the target are shaded and labeled "Visible." The covered area for a firer with respect to a target is the same as the covered area when viewed from the target to the firer. However, the visibility areas as viewed from firer and target are not the same. A member of an assault squad often cannot detect a target behind a small bush, but a person at the target can look through the bush and see members of the assaulting squad. Thus the boundaries between the "Concealed" and "Visible" areas may not be the same when viewed from the firer's position as from the target's location.

Visibility data for the rifle squad in the approach to contact situation are shown in Table B-14. Although this was a moving situation, the firers stopped and fired from each event line when the targets were raised. Thus,

* A complete series of visibility charts for Situation 1 are available to users with a specialized requirement for the data. Requests for CDCEC SAWS Rifle Squad in Line Assault Visibility Data should be addressed to: CG, USACDCEC through USACDC for approval.

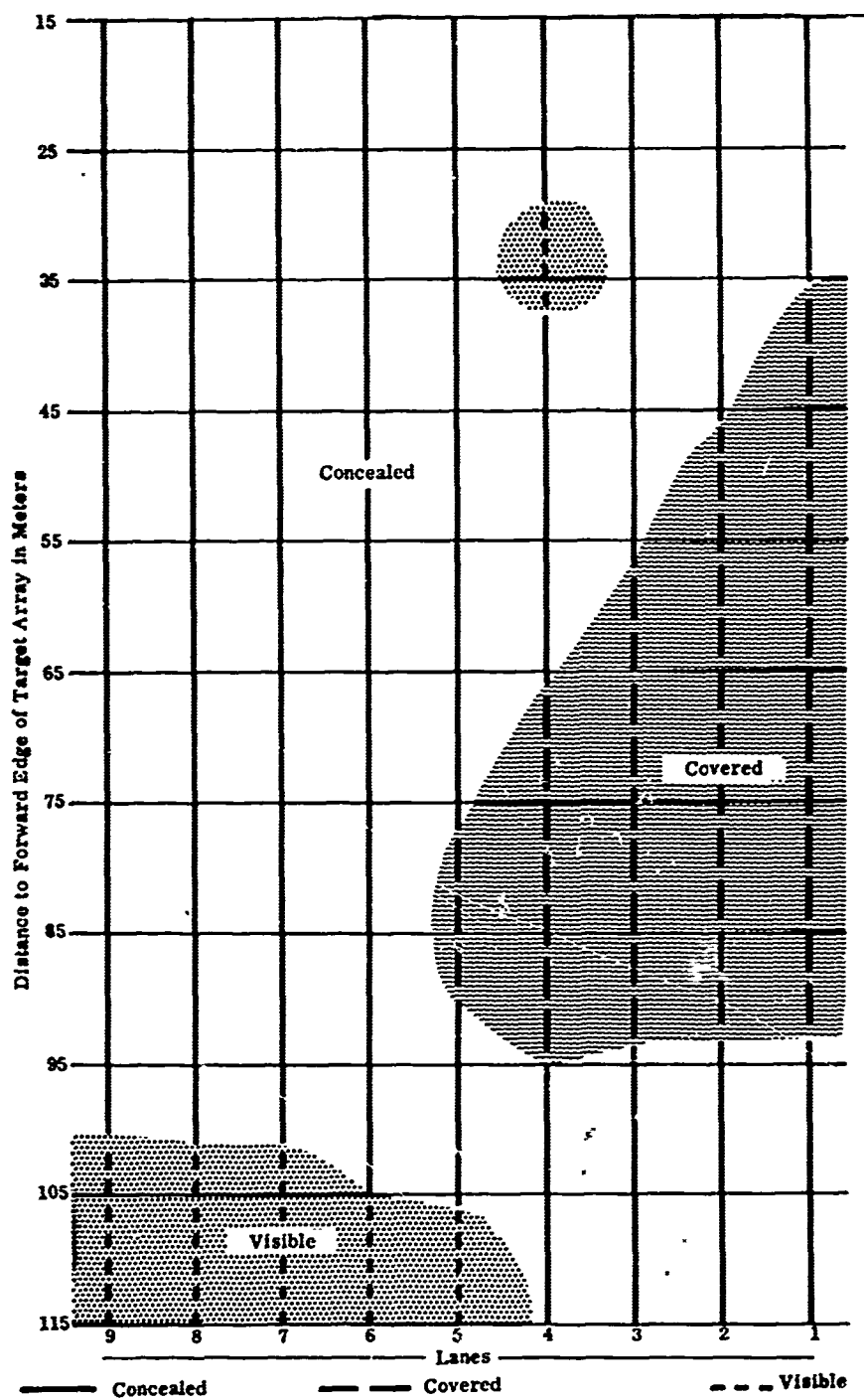


Figure B-5
SITUATION 1, FIRER TO TARGET NO. 4 VISIBILITY DIAGRAM

B-45

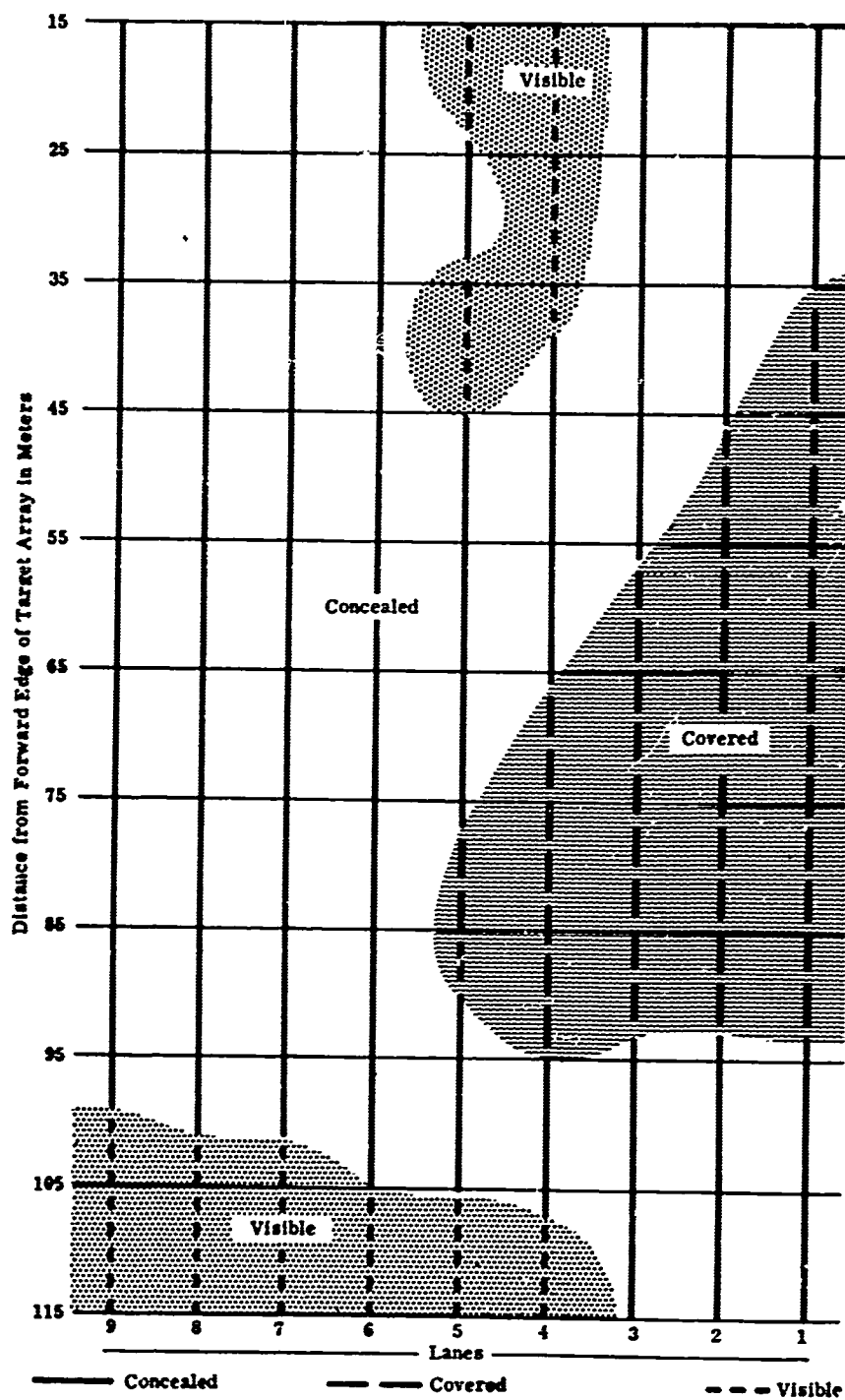


Figure B-6
SITUATION 1, TARGET NO. 4 TO FIRER VISIBILITY DIAGRAM

the detection problem is essentially reduced to a fixed firing point case. The visibility data presented in tabular format relate the stationary position of the firer, in his respective lane at each event line, to each target raised in that same event.

Visibility data for the live fire defense against attack, both day and night situations, are tabulated from each firing point to each target in Tables B-15 and B-16. These data were obtained by stationing a soldier at each firing position (in sequence), in the proper firing attitude, and recording his visual observations as targets were raised. When a target could not be seen, additional personnel were used to differentiate between vegetation and terrain masking. The focal point of observation at night was the simulator flash. The focal point of observation in daylight was the target body.

Table B-14

**FIRING POINTS TO TARGETS VISIBILITY DATA FOR RANGE B,
RIFLE SQUAD IN APPROACH TO CONTACT**

| Number | | Firing Points | | | | | | | | | |
|--------|--------|---------------|---|---|---|---|---|---|---|---|--|
| Event | Target | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 1 | A1 | x | x | x | x | x | x | x | x | x | |
| | A2 | x | x | x | x | x | x | x | x | x | |
| | A3 | x | x | x | x | x | x | x | x | x | |
| | A4 | x | x | x | x | x | x | x | x | x | |
| | A5 | x | x | x | x | x | x | x | x | x | |
| | A6 | x | x | x | x | x | x | x | x | x | |
| 2 | A7 | * | * | * | * | x | x | x | x | x | |
| 3 | A11 | x | x | x | * | * | * | * | * | * | |
| | A12 | x | x | x | * | * | * | * | * | * | |
| | A13 | * | * | * | x | x | x | * | * | * | |
| | A14 | x | x | x | * | * | * | * | * | * | |
| | A15 | * | * | * | x | x | x | * | * | * | |
| | A16 | * | * | * | x | x | x | * | * | * | |
| | A17 | * | * | * | x | x | x | * | * | * | |
| | A18 | * | * | * | * | * | * | x | x | x | |
| | A19 | * | * | * | * | * | * | x | x | x | |
| | A20 | * | * | * | * | * | * | x | x | x | |
| 4 | A8 | x | x | x | x | x | x | x | x | x | |
| | A9 | x | x | x | x | x | x | x | x | x | |
| 5 | A21 | x | x | x | x | x | x | x | x | x | |
| | A22 | x | x | x | x | x | x | x | x | x | |

| Number | | Firing Points | | | | | | | | | |
|--------|--------|---------------|---|---|---|---|---|---|---|---|--|
| Event | Target | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 6 | A23 | x | x | x | x | x | x | x | x | x | |
| 7 | A24 | x | x | x | x | x | x | x | x | x | |
| | A25 | x | x | x | x | x | x | x | x | x | |
| 8 | A26 | x | x | x | x | x | x | x | x | x | |
| | A27 | x | x | x | x | x | x | x | x | x | |
| | A28 | x | x | x | x | x | x | x | x | x | |
| | A29 | x | x | x | x | x | x | x | x | x | |
| | A30 | x | x | x | x | x | x | x | x | x | |
| | A37 | x | x | x | x | x | x | x | x | x | |
| 9 | A34 | x | x | x | x | x | x | x | x | x | |
| | A35 | x | x | x | x | x | x | x | x | x | |
| | A36 | x | x | x | x | x | x | x | x | x | |
| 10 | A31 | * | * | x | x | x | x | * | * | * | |
| | A32 | * | * | x | x | x | x | * | * | * | |
| | A33 | * | * | x | x | x | x | * | * | * | |
| 11 | A38 | x | x | x | x | x | x | x | x | x | |
| | A39 | x | x | x | x | x | x | x | x | x | |
| 12 | A41 | * | * | * | x | x | x | x | * | * | |
| | A42 | * | * | * | x | x | x | x | * | * | |

x Target is visible, is inside the safety limits, and can be fired on and hit

* Target is visible, is outside the safety limits, and cannot be fired on

NOTE: Targets A10 and A40 were not used

Table B-15

**FIRING POINTS TO TARGETS VISIBILITY DATA FOR RANGE C,
DEFENSE AGAINST ATTACK**

| Target Number | Firing Points | | | | | | | | |
|------------------|---------------|---|---|---|---|---|---|---|---|
| | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 1 | x | x | x | x | * | * | * | * | * |
| 2 | x | x | x | x | x | * | * | * | * |
| 3 | x | x | x | x | x | * | * | * | * |
| 4 | * | x | x | x | x | x | * | * | * |
| 5 | * | * | x | x | x | x | * | * | * |
| 6 | * | * | | x | x | x | x | * | * |
| 7 | * | * | * | x | x | x | x | x | * |
| 8 | * | * | * | * | * | x | x | x | x |
| 9 | * | * | * | * | x | x | x | x | x |
| 10 | * | * | * | * | * | x | x | x | |
| 11 | x | x | x | x | x | x | x | * | * |
| 12 | * | x | x | x | x | x | x | | |
| 13 | x | x | x | x | x | x | * | * | * |
| 14 | | x | x | x | x | x | | | * |
| 15 | * | x | x | x | x | 0 | 0 | 0 | |
| 16 | * | * | * | x | | | | | 0 |
| 17 | x | x | x | x | x | x | | | x |
| 18 | * | * | x | x | | | | | 0 |
| 19 | * | * | * | * | x | x | x | 0 | 0 |
| 20 | * | * | * | * | * | x | x | 0 | x |
| 21 | * | * | * | x | x | x | x | 0 | 0 |
| 22 | x | x | x | x | x | x | x | x | x |
| 23 | | x | x | x | x | x | x | x | x |
| 24 | | | x | x | x | x | | | x |
| 25 | 0 | x | x | x | x | x | | | x |
| 26 | | x | x | x | x | x | | | |
| 27 | x | x | x | x | x | x | x | x | x |
| 28 | x | x | x | x | x | x | x | x | x |
| 29 | x | x | x | x | x | x | x | x | x |
| 30 | x | x | x | x | x | x | x | x | x |
| 31 | x | x | x | x | x | x | x | x | x |
| 32 | x | x | x | x | x | x | x | x | x |
| 33 | x | x | x | x | x | x | x | x | x |
| 34 | x | x | x | x | x | x | x | x | x |
| 35 | x | x | x | x | x | x | x | x | x |
| 36 | x | x | x | x | x | x | x | x | x |
| 37 | x | x | x | x | x | x | | | x |
| 38 | x | x | x | x | x | x | x | x | x |
| 39 | x | x | x | x | x | x | x | x | x |
| 40 | x | x | x | x | x | x | x | x | x |
| 41 | x | x | x | x | x | x | x | x | x |
| 42 | x | x | x | x | x | x | x | x | x |
| 43 | x | x | x | x | x | x | x | x | x |
| 44 | x | x | x | x | x | x | x | x | x |
| 45 | x | x | x | x | x | x | x | x | x |
| 46 | x | x | x | x | x | x | x | x | x |
| 47 | x | x | x | x | x | x | x | x | x |
| 48 | x | x | x | x | x | x | x | x | x |
| 49 | x | x | x | x | x | x | x | x | x |
| 50 | x | x | x | x | x | x | x | x | x |

x The target is visible

Blank indicates the target is concealed, but can be fired on and hit

0 The target is covered

* Target is outside range safety limits (and not fired on from this firing point)

Table B-16

**FIRING POINTS TO TARGETS VISIBILITY DATA FOR RANGE C,
NIGHT DEFENSE AGAINST ATTACK**

| Target Number | Firing Points | | | | | | | | |
|------------------|---------------|---|---|---|---|---|---|---|---|
| | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 1 | x | x | x | x | * | * | * | * | * |
| 2 | x | x | x | | x | * | * | * | * |
| 3 | | x | x | | x | * | * | * | * |
| 4 | * | x | x | x | x | x | * | * | * |
| 5 | * | * | x | x | x | x | * | * | * |
| 6 | * | * | | | x | x | | * | * |
| 7 | * | * | * | x | x | | | | * |
| 8 | * | * | * | * | * | | x | x | x |
| 9 | * | * | * | * | | | | | |
| 10 | * | * | * | * | * | | | | |
| 11 | x | | | | x | x | | * | * |
| 12 | * | x | x | x | x | x | x | | |
| 13 | | | | | | x | * | * | * |
| 14 | | x | x | x | x | x | | | * |
| 15 | * | x | x | x | | 0 | 0 | 0 | |
| 16 | * | * | * | x | | | | | 0 |
| 17 | x | x | x | x | x | x | | | x |
| 18 | * | * | x | x | | | | | 0 |
| 19 | * | * | * | * | x | x | x | 0 | 0 |
| 20 | * | * | * | * | x | x | | 0 | |
| 21 | * | * | * | x | x | x | x | 0 | 0 |
| 22 | x | x | x | x | x | x | x | x | x |
| 23 | | x | x | x | x | x | x | x | x |
| 24 | | | x | x | x | x | | | x |
| 25 | 0 | x | | | | | | | |
| 26 | | x | x | x | x | x | | | |
| 27 | x | x | x | x | x | x | x | x | x |
| 28 | x | x | x | x | x | x | x | x | x |
| 29 | x | x | x | x | x | x | x | x | x |
| 30 | x | x | x | x | x | x | x | x | x |
| 38 | x | x | x | x | x | x | x | x | x |
| 39 | x | x | x | x | x | | | | |

x Simulator flash is visible; target can be fired on

Blank indicates simulator flash is not visible, or simulator is not present, but target can be hit

0 Simulator flash is not visible; target is covered

* Target is outside range safety limits (and not fired on from this firing point).

Appendix 4 to Annex B

TARGET SYSTEM COMMAND PROGRAM

Tables B-17 through B-23 represent the target system command program and identify the sequence of programmed events by individual target. The individual target exposure times shown on these tables are programmed total exposure times. Targets fell when hit; therefore, the time that targets were exposed was shortened when they were hit. These times are not to be confused with the cumulative exposure time (CET) which varied according to the number of targets hit and the time required to hit them.

For clarity, the arrows on the tables indicate the simulator associated with a specific target. The simulators are identified as R (rifle), AR (automatic rifle), and MG (machinegun).

The following tables were used throughout the field experiment. For example, every rifle squad firing in Situation 1 used the target system command program shown in Table B-17.

Table B-17

TARGET SYSTEM COMMAND PROGRAM
RIFLE SQUAD IN LINE ASSAULT*
 (Situation 1, Range A)

| Sequence Programmed Events (Minutes) | Target and Weapon Simulated | | Total Rounds Fired by Simulator | Target Exposure Time (Minutes) |
|---|--------------------------------|-----------|---------------------------------------|---|
| | Target | Simulator | | |
| 0.000 | 8 | → MG | 119 | 2.000 |
| 0.100 | 13 | → R | 67 | 1.900 |
| 0.150 | 3 | → R | 80 | 1.850 |
| 0.200 | 7 | | | 1.800 |
| 0.200 | 14 | | | 1.800 |
| 0.220 | | 7R | 8 | |
| 0.232 | | 14R | 8 | |
| 0.250 | 5 | None | | 1.750 |
| 0.250 | 17 | | | 1.750 |
| 0.300 | | 17R | 36 | |
| 0.370 | 1 | → MG | 182 | 1.634 |
| 0.484 | 15 | | | 1.516 |
| 0.484 | 2 | None | | 1.516 |
| 0.484 | 11 | | | 1.516 |
| 0.500 | | 15R | 8 | |
| 0.520 | | 11R | 28 | |
| 0.584 | 12 | | | 1.416 |
| 0.584 | 9 | | | 1.416 |
| 0.600 | | 12R | 8 | |
| 0.600 | | 9AR | 32 | |
| 0.650 | 4 | None | | 1.350 |
| 0.650 | 10 | | | 1.350 |
| 0.686 | | 10R | 8 | |
| 0.716 | 6 | | | 1.284 |
| 0.716 | 16 | | | 1.284 |
| 0.736 | | 6R | 17 | |
| 0.768 | | 16AR | 101 | |
| Total | | | 702 | 27.132 |

* The command program had an initial sequence of events (0.000 to 0.768) and a cyclic sequence from 0.800 to 1.100 minutes that was repeated until the end of the assault. Pacers were used at each end of the squad to assist in controlling the rate of advance. The ranges fired were from 148 to 15 meters.

Table B-18

**TARGET SYSTEM COMMAND PROGRAM
RIFLE SQUAD AS A BASE OF FIRE AND MACHINEGUN
SQUAD IN FIRE SUPPORT OF ASSAULT ***
(Situations 2 and 3, Range A)

| Sequence Programmed Events (Minutes) | Target and Weapon Simulated | | Total Rounds Fired by Simulator | Target Exposure Time (Minutes) | Average Firing Distance (Meters) |
|---|--------------------------------|-----------|---------------------------------------|---|---|
| | Target | Simulator | | | |
| 0.000 | 8 | →MG | 223 | 4.000 | 297 |
| 0.100 | 13 | →R | 18 | 3.900 | 273 |
| 0.150 | 6 | →R | 44 | 3.850 | 293 |
| 0.200 | 7 | →R | 27 | 3.800 | 305 |
| 0.200 | 14 | → | | 3.800 | 274 |
| 0.204 | | →14R | 9 | | |
| 0.250 | 5 | None | | 3.750 | 291 |
| 0.250 | 17 | → | | 3.750 | 283 |
| 0.250 | 26 | →MG | 279 | 3.750 | 284 |
| 0.258 | | →17R | 8 | | |
| 0.366 | 1 | →MG | 127 | 3.634 | 298 |
| 0.484 | 2 | None | | 3.516 | 297 |
| 0.484 | 11 | → | | 3.516 | 277 |
| 0.484 | 15 | →R | 8 | 3.516 | 277 |
| 0.484 | 28 | → | | 3.516 | 307 |
| 0.488 | | →11R | 8 | | |
| 0.492 | | →28R | 8 | | |
| 0.584 | 9 | →AR | 8 | 3.416 | 291 |
| 0.584 | 12 | → | | 3.416 | 275 |
| 0.602 | | →12R | 9 | | |
| 0.650 | 4 | None | | 3.350 | 283 |
| 0.650 | 10 | →R | 9 | 3.350 | 283 |
| 0.650 | 20 | None | | 3.350 | 299 |
| 0.650 | 29 | → | | 3.350 | 310 |
| 0.652 | | →29R | 9 | | |

* The command program had an initial sequence of events (0.000 to 0.912) and a cyclic program that began after barrels were changed and that was repeated as necessary to complete the base of fire and machinegun in fire support of the assault.

Table B-18

TARGET SYSTEM COMMAND PROGRAM
RIFLE SQUAD AS A BASE OF FIRE AND MACHINEGUN
SQUAD IN FIRE SUPPORT OF ASSAULT
 (Situations 2 and 3, Range A)
 (Concluded)

| Sequence Programmed Events (Minutes) | Target and Weapon Simulated | | Total Rounds Fired by Simulator | Target Exposure Time (Minutes) | Average Firing Distance (Meters) |
|---|--------------------------------|-----------|---------------------------------------|---|---|
| | Target | Simulator | | | |
| 0.716 | 16 | | | 3.284 | 275 |
| 0.716 | 18 | | | 3.284 | 291 |
| 0.716 | 19 | R | 29 | 3.284 | 298 |
| 0.716 | 23 | | | 3.284 | 286 |
| 0.716 | 27 | | | 3.284 | 295 |
| 0.734 | | 23R | 9 | | |
| 0.750 | | 27R | 8 | | |
| 0.766 | | 16AR | 75 | | |
| 0.784 | | 18AR | 27 | | |
| 0.816 | 3 | R | 37 | 3.184 | 294 |
| 0.816 | 21 | | | 3.184 | 289 |
| 0.816 | 25 | | | 3.184 | 288 |
| 0.834 | | 21R | 7 | | |
| 0.850 | | 25R | 9 | | |
| 0.900 | 22 | R | 36 | 3.100 | 287 |
| 0.900 | 24 | | | 3.100 | 290 |
| 0.900 | 30 | None | | 3.100 | 322 |
| 0.912 | | 24AR | 46 | | |
| Total | | | 1077 | 103.802 | |

Table B-19

**TARGET SYSTEM COMMAND PROGRAM
RIFLE SQUAD IN APPROACH TO CONTACT
(Situation 4, Range B)**

| Sequence Programmed Events (Minutes) | Target and Weapon Simulated | | Total Rounds Fired by Simulator | Target Exposure Time (Minutes) | Average Firing Distance (Meters) |
|---|--------------------------------|-----------|---------------------------------------|---|---|
| | Target | Simulator | | | |
| Event 1 | | | | | |
| 0.000 | 6 → | R | 12 | 0.082 | 48 |
| 0.004 | 1 → | AR | 25 | 0.078 | 43 |
| 0.008 | 2 → | R | 13 | 0.074 | 52 |
| 0.010 | 4 → | AR | 21 | 0.072 | 47 |
| 0.012 | 5 → | AR | 20 | 0.070 | 45 |
| 0.016 | 3 → | R | 10 | 0.066 | 51 |
| Event 2. | | | | | |
| 0.000 | 7 → | R | 11 | 0.050 | 23 |
| Event 3 | | | | | |
| 0.000 | 11 → | R | 9 | 0.066 | 22 |
| 0.000 | 12 → | AR | 17 | 0.066 | 23 |
| 0.000 | 13 → | R | 14 | 0.066 | 31 |
| 0.000 | 14 → | R | 12 | 0.066 | 28 |
| 0.000 | 15 → | R | 9 | 0.066 | 24 |
| 0.000 | 16 → | MG | 20 | 0.066 | 28 |
| 0.000 | 17 → | R | 9 | 0.066 | 28 |
| 0.000 | 18 → | R | 14 | 0.066 | 27 |
| 0.000 | 19 → | AR | 17 | 0.066 | 27 |
| 0.000 | 20 → | R | 6 | 0.066 | 35 |
| Event 4 | | | | | |
| 0.000 | 9 → | 9R | 14 | 0.134 | 105 |
| 0.034 | 8 → | 8R | 31 | 0.166 | 106 |
| 0.040 | | | | | |
| Event 5 | | | | | |
| 0.000 | 21 | None | | 0.134 | 162 |
| 0.000 | 22 → | 22AR | 33 | 0.166 | 163 |
| 0.016 | | | | | |

Table B-19

**TARGET SYSTEM COMMAND PROGRAM
RIFLE SQUAD IN APPROACH TO CONTACT**
(Situation 4, Range B)
(Concluded)

| Sequence Programmed Events (Minutes) | Target and Weapon Simulated | | Total Rounds Fired by Simulator | Target Exposure Time (Minutes) | Average Firing Distance (Meters) |
|---|--------------------------------|-----------|---------------------------------------|---|---|
| | Target | Simulator | | | |
| <u>Event 6</u> | | | | | |
| 0.000 | 23 → | R | 22 | 0.100 | 76 |
| <u>Event 7</u> | | | | | |
| 0.000 | 24 → | AR | 11 | 0.066 | 91 |
| 0.034 | 25 → | | | 0.066 | 92 |
| 0.036 | | 25R | 9 | | |
| <u>Event 8</u> | | | | | |
| 0.000 | 30 → | R | 18 | 0.066 | 47 |
| 0.000 | 37 → | | | 0.084 | 78 |
| 0.004 | 26 → | None | | 0.066 | 57 |
| 0.010 | 27 → | None | | 0.066 | 55 |
| 0.016 | 29 → | None | | 0.068 | 72 |
| 0.016 | | 37R | 13 | | |
| 0.024 | 28 → | None | | 0.084 | 70 |
| <u>Event 9</u> | | | | | |
| 0.000 | 31 → | None | | 0.066 | 45 |
| 0.000 | 32 → | R | 14 | 0.066 | 37 |
| 0.000 | 33 → | None | | 0.066 | 51 |
| <u>Event 10</u> | | | | | |
| 0.000 | 34 → | None | | 0.034 | 43 |
| 0.000 | 35 → | R | 5 | 0.034 | 40 |
| 0.000 | 36 → | None | | 0.034 | 44 |
| <u>Event 11</u> | | | | | |
| 0.000 | 38 → | R | 19 | 0.084 | 75 |
| 0.050 | 39 → | R | 17 | 0.084 | 84 |
| <u>Event 12</u> | | | | | |
| 0.000 | 41 → | R | 11 | 0.050 | 32 |
| 0.000 | 42 → | None | | 0.050 | 30 |
| Total | | | 456 | 2.968 | |

Table B-20

**TARGET SYSTEM COMMAND PROGRAM RIFLE SQUAD AS A
BASE OF FIRE SUPPORTING THE ADVANCE
(Situation 5, Range B)**

| Sequence Programmed Events (Minutes) | Target and Weapon Simulated | | Total Rounds Fired by Simulator | Target Exposure Time (Minutes) | Average Firing Distance (Meters) |
|---|--------------------------------|-----------|---------------------------------------|---|---|
| | Target | Simulator | | | |
| <u>Array X</u> | | | | | |
| 0.000 | 20 | | | 2.000 | 395 |
| 0.000 | 24 | | | 2.000 | 392 |
| 0.000 | 25 | | | 2.000 | 429 |
| 0.016 | | 24R | 110 | | |
| 0.034 | | 25AR | 82 | | |
| 0.050 | | 20R | 140 | | |
| 0.134 | 14 | None | | 1.866 | 434 |
| 0.134 | 16 | None | | 1.672* | 408 |
| 0.216 | 22 | | | 1.784 | 413 |
| 0.324 | | 22MG | 208 | | |
| 0.334 | 19 | None | | 1.392* | 425 |
| 0.334 | 23 | | | 1.666 | 401 |
| 0.382 | | 23AR | 151 | | |
| 0.466 | 17 | None | | 1.414 * | 402 |
| 0.466 | 21 | None | | 1.278* | 420 |
| 0.466 | 27 | None | | 1.344 * | 389 |
| 0.566 | 15 | | | 1.434 | 415 |
| 0.566 | 18 | None | | 1.218* | 410 |
| 0.566 | 26 | None | | 1.188* | 390 |
| 0.586 | | 15MG | 157 | | |
| Total | | | 848 | 22.256 | |

* Target was raised more than once

Table B-20
**TARGET SYSTEM COMMAND PROGRAM RIFLE SQUAD AS A
 BASE OF FIRE SUPPORTING THE ADVANCE**
 (Situation 5, Range B)
 (Concluded)

| Sequence Programmed Events (Minutes) | Target and Weapon Simulated | | Total Rounds Fired by Simulator | Target Exposure Time (Minutes) | Average Firing Distance (Meters) |
|---|--------------------------------|-----------|---------------------------------------|---|---|
| | Target | Simulator | | | |
| <u>Array Y</u> | | | | | |
| 0.000 | 33 | None | 132 | 1.840* | 493 |
| 0.000 | 40 | 40AR | | 2.000 | 547 |
| 0.032 | | | | | |
| 0.116 | 28 | None | 127 | 1.884 | 488 |
| 0.116 | 32 | | | 1.614* | 489 |
| 0.116 | 38 | | | 1.644* | 533 |
| 0.116 | 39 | | | 1.726* | 545 |
| 0.168 | | 28AR | | | |
| 0.200 | 29 | None | 86 | 1.800 | 504 |
| 0.200 | 36 | | | 1.650* | 510 |
| 0.200 | 37 | | | 1.550* | 528 |
| 0.234 | | 29R | | | |
| 0.300 | 30 | None | 245 | 1.490* | 509 |
| 0.300 | 34 | 34MG | | 1.700 | 495 |
| 0.368 | | | | | |
| 0.434 | 31 | 31R | 73 | 1.566 | 499 |
| 0.434 | 35 | | | 1.566 | 502 |
| 0.500 | | | 35R | 72 | |
| 0.544 | | | | | |
| Total | | | 735 | 22.030 | |

* Target was raised more than once

Table B-21
TARGET SYSTEM COMMAND PROGRAM
MACHINEGUN SQUAD IN FIRE SUPPORT OF THE ADVANCE
(Situation 6, Range B)

| Sequence Programmed Events (Minutes) | Target and Weapon Simulated | | Total Rounds Fired by Simulator | Target Exposure Time (Minutes) | Average Firing Distance (Meters) |
|---|--------------------------------|-----------|---------------------------------------|---|---|
| | Target | Simulator | | | |
| <u>Array X</u> | | | | | |
| 0.000 | 20 | | | 2.000 | 646 |
| 0.000 | 24 | | | 2.000 | 616 |
| 0.000 | 25 | | | 2.000 | 613 |
| 0.016 | | 24R | 110 | | |
| 0.024 | | 25AR | 82 | | |
| 0.050 | | 20R | 140 | | |
| 0.134 | 14 | None | | 1.866 | 645 |
| 0.134 | 16 | None | | 1.672* | 624 |
| 0.216 | 22 | | | 1.784 | 633 |
| 0.324 | | 22MG | 208 | | |
| 0.334 | 19 | None | | 1.392* | 640 |
| 0.334 | 23 | | | 1.666 | 624 |
| 0.382 | | 23AR | 151 | | |
| 0.466 | 17 | None | | 1.414 * | 620 |
| 0.466 | 21 | None | | 1.278* | 640 |
| 0.466 | 27 | None | | 1.344 * | 605 |
| 0.566 | 15 | | | 1.434 | 628 |
| 0.566 | 18 | None | | 1.218 * | 630 |
| 0.566 | 26 | None | | 1.188* | 629 |
| 0.586 | | 15MG | 157 | | |
| Total | | | 848 | 22.256 | |
| <u>Array Y</u> | | | | | |
| 0.000 | 33 | None | | 1.840* | 692 |
| 0.000 | 40 | | | 2.000 | 752 |
| 0.032 | | 40AR | 132 | | |
| 0.116 | 28 | | | 1.884 | |
| 0.116 | 32 | None | | 1.614 * | 690 |
| 0.116 | 38 | None | | 1.644 * | 738 |
| 0.116 | 39 | None | | 1.726 * | 750 |
| 0.168 | | 28AR | 127 | | |

* Target was raised more than once

Table B-21
TARGET SYSTEM COMMAND PROGRAM
MACHINEGUN SQUAD IN FIRE SUPPORT OF THE ADVANCE
(Situation 6, Range B)
(Concluded)

| Sequence Programmed Events (Minutes) | Target and Weapon Simulated | | Total Rounds Fired by Simulator | Target Exposure Time (Minutes) | Average Firing Distance (Meters) |
|---|--------------------------------|-----------|---------------------------------------|---|---|
| | Target | Simulator | | | |
| 0.200 | 29 | | | 1.800 | 706 |
| 0.200 | 36 | None | | 1.650* | 716 |
| 0.200 | 37 | None | | 1.550* | 730 |
| 0.234 | | 29R | 86 | | |
| 0.300 | 30 | None | | 1.490* | |
| 0.300 | 34 | | | 1.700 | 708 |
| 0.368 | | 34MG | 245 | | |
| 0.434 | 31 | | | 1.566 | 700 |
| 0.434 | 35 | | | 1.566 | 698 |
| 0.500 | | 31R | 73 | | |
| 0.544 | | 35R | 72 | | |
| Total | | | 735 | 22.030 | |
| <u>Array Z</u> | | | | | |
| 0.000 | 12 | AR | 95 | 2.000 | 451 |
| 0.000 | 13 | None | | 1.760* | 467 |
| 0.066 | 4 | | | 1.934 | 475 |
| 0.066 | 11 | None | | 1.760* | 452 |
| 0.100 | | 4MG | 196 | | |
| 0.100 | 10 | None | | 1.780* | 448 |
| 0.166 | 8 | | | 1.834 | 459 |
| 0.166 | 2 | | | 1.834 | 484 |
| 0.208 | | 8R | 76 | | |
| 0.234 | | 2R | 84 | | |
| 0.270 | 7 | None | | 1.606* | 458 |
| 0.300 | 3 | None | | 1.486* | 484 |
| 0.300 | 9 | | | 1.700 | 452 |
| 0.324 | 5 | None | | 1.426* | 468 |
| 0.324 | | 9AR | 83 | | |
| 0.366 | 1 | None | | 1.340* | 470 |
| 0.366 | 6 | | | 1.634 | 468 |
| 0.416 | | 6R | 47 | | |
| Total | | | 581 | 22.094 | |

* Target was raised more than once

Table B-22

**TARGET SYSTEM COMMAND PROGRAM FOR
RIFLE SQUAD AND MACHINEGUN SQUAD IN DEFENSE
AGAINST ATTACK
(Situations 7 and 9, Range C)**

| Sequence Programmed Events (Minutes) | Target and Weapon Simulated | | Total Rounds Fired by Simulator | Target Exposure Time (Minutes) | Average Firing Distance (Meters) |
|---|--------------------------------|-----------|---------------------------------------|---|---|
| | Target | Simulator | | | |
| 0.000 | 49 | → MG | 162 | 0.500 | 320 |
| 0.020 | 47 | None | | 0.400 | 322 |
| 0.040 | 50 | None | | 0.420 | 336 |
| 0.070 | 48 | None | | 0.420 | 328 |
| 0.750 | 44 | → AR | 96 | 0.340 | 279 |
| 0.800 | 43 | None | | 0.340 | 288 |
| 1.220 | 41 | → MG | 188 | 0.590 | 269 |
| 1.270 | 40 | None | | 0.590 | 274 |
| 1.340 | 42 | None | | 0.590 | 262 |
| 2.190 | 46 | → AR | 91 | 0.320 | 232 |
| 2.290 | 45 | → 45R | | 0.320 | 235 |
| 2.310 | | | 41 | | |
| 3.040 | 38 | → 38R | | 0.890 * | 188 |
| 3.080 | | | 137 | | |
| 3.100 | 39 | → 39MG | | 0.872 * | 215 |
| 3.150 | | | 246 | | |
| 3.690 | 37 | → AR | 143 | 0.450 | 185 |
| 3.720 | 35 | None | | 0.450 | 195 |
| 3.740 | 36 | None | | 0.450 | 189 |
| 4.770 | 34 | → AR | 87 | 0.290 | 151 |
| 5.290 | 31 | None | | 0.340 | 164 |
| 5.300 | 33 | → MG | 269 | 0.340 | 152 |
| 5.340 | 32 | None | | 0.340 | 170 |
| 5.800 | 25 | → 25AR | | 0.250 | 115 |
| 5.840 | | | 60 | | |
| 5.850 | 24 | None | | 0.250 | 114 |
| 5.870 | 26 | None | | 0.250 | 112 |
| 5.890 | 22 | → 22AR | | 0.220 | 114 |
| 5.910 | | | 62 | | |
| 5.920 | 23 | None | | 0.220 | 114 |
| 6.340 | 27 | → MG | 112 | 0.340 | 125 |
| 6.350 | 29 | AR | | 0.340 | 129 |
| | | Not Used | | | |
| 6.390 | 28 | None | | 0.340 | 122 |

* Target was raised more than once.

Table B-22

**TARGET SYSTEM COMMAND PROGRAM FOR
RIFLE SQUAD AND MACHINEGUN SQUAD IN DEFENSE
AGAINST ATTACK
(Situations 7 and 9, Range C)
(Concluded)**

| Sequence Programmed Events (Minutes) | Target and Weapon Simulated | | Total Rounds Fired by Simulator | Target Exposure Time (Minutes) | Average Firing Distance (Meters) |
|---|--------------------------------|-----------|---------------------------------------|---|---|
| | Target | Simulator | | | |
| 6.400 | 30 | → R | 38 | 0.340 | 136 |
| 6.750 | 21 | None | | 0.114 | 106 |
| 6.770 | 20 | → AR | 37 | 0.110 | 106 |
| 6.800 | 19 | None | | 0.074 | 105 |
| 7.064 | 18 | None | | 0.166 | 85 |
| 7.070 | 17 | | | 0.170 | 87 |
| 7.090 | | → 17AR | 49 | | |
| 7.290 | 13 | → R | 50 | 0.220 | 69 |
| 7.320 | 14 | None | | 0.200 | 74 |
| 7.340 | 16 | None | | 0.190 | 76 |
| 7.350 | 15 | AR | | 0.160 | 73 |
| | | Not Used | | | |
| 7.540 | 11 | → AR | 43 | 0.150 | 61 |
| 7.560 | 12 | None | | 0.120 | 60 |
| 7.880 | 5 | → AR | 81 | 0.250 | 47 |
| 7.880 | 7 | → R | 77 | 0.250 | 54 |
| 7.890 | 3 | → R | 59 | 0.250 | 52 |
| 7.890 | 8 | → R | 56 | 0.250 | 51 |
| 7.900 | 1 | → R | 54 | 0.250 | 46 |
| 7.900 | 10 | → R | 67 | 0.250 | 62 |
| 7.910 | 9 | → R | 54 | 0.250 | 57 |
| 7.920 | 2 | → AR | 80 | 0.250 | 49 |
| 7.920 | 6 | → R | 72 | 0.250 | 47 |
| 7.940 | 4 | → R | 57 | 0.250 | 48 |
| Total | | | 2568 | 15.976 | |

Table B-23

**TARGET SYSTEM COMMAND PROGRAM RIFLE SQUAD
IN NIGHT DEFENSE AGAINST ATTACK
(Situation 8, Range C)**

| Sequence Programmed Events (Minutes) | Target and Weapon Simulated | | Total Rounds Fired by Simulator | Target Exposure Time (Minutes) | Average Firing Distance (Meters) |
|---|--------------------------------|-----------|---------------------------------------|---|---|
| | Target | Simulator | | | |
| <u>Cycle 1</u> | | | | | |
| 0.000 | 24 | None | | 0.170 | 114 |
| 0.000 | 25 | → AR | 42 | 0.170 | 115 |
| 0.000 | 26 | None | | 0.170 | 112 |
| 0.090 | 22 | ↘ | | 0.100 | 114 |
| 0.090 | 23 | None | | 0.100 | 114 |
| 0.090 | | ↘ 22AR | 26 | | |
| 0.550 | 29 | → AR | 72 | 0.250 | 129 |
| 0.550 | 30 | → R | 37 | 0.250 | 136 |
| 0.590 | 27 | → MG | 80 | 0.250 | 125 |
| 0.590 | 28 | None | | 0.250 | 122 |
| 0.970 | 19 | None | | 0.100 | 105 |
| 0.970 | 20 | → AR | 27 | 0.100 | 106 |
| 0.970 | 21 | None | | 0.100 | 106 |
| 1.100 | 38 | → R | 25 | 0.170* | 188 |
| 1.100 | 39 | → MG | 58 | 0.170* | 215 |
| 1.240 | 18 | None | | 0.100 | 85 |
| 1.270 | 17 | → AR | 24 | 0.090 | 87 |
| 1.520 | 13 | ↘ | | 0.140 | 69 |
| 1.520 | 14 | None | | 0.140 | 74 |
| 1.522 | | ↘ 13R | 33 | | |
| 1.540 | 15 | → AR | 31 | 0.120 | 73 |
| 1.540 | 16 | None | | 0.120 | 76 |
| 1.740 | 11 | → AR | 20 | 0.070 | 61 |
| 1.740 | 12 | None | | 0.070 | 60 |
| 2.090 | 1 | → R | 25 | 0.170 | 46 |
| 2.090 | 2 | → AR | 50 | 0.170 | 49 |
| 2.090 | 3 | → R | 24 | 0.170 | 52 |
| 2.090 | 4 | → R | 25 | 0.170 | 48 |
| 2.090 | 5 | → AR | 49 | 0.170 | 47 |
| 2.090 | 6 | → R | 27 | 0.170 | 47 |
| 2.090 | 7 | → R | 24 | 0.170 | 54 |
| 2.090 | 8 | → R | 34 | 0.170 | 51 |

* Target was raised more than once

Table R-23

**TARGET SYSTEM COMMAND PROGRAM RIFLE SQUAD
IN NIGHT DEFENSE AGAINST ATTACK
(Situation 8, Range C)
(Concluded)**

| Sequence Programmed Events (Minutes) | Target and Weapon Simulated | | Total Rounds Fired by Simulator | Target Exposure Time (Minutes) | Average Firing Distance (Meters) |
|---|--------------------------------|-----------|---------------------------------------|---|---|
| | Target | Simulator | | | |
| <u>Cycle 1</u> | | | | | |
| 2.090 | 9 → | R | 19 | 0.170 | 57 |
| 2.090 | 10 → | | | 0.170 | 62 |
| 2.096 | | 10R | 32 | | |
| Total | | | 759 | 4.900 | |
| <u>Cycle 2</u> | | | | | |
| 0.000 | 17 → | AR | 22 | 0.084 | 87 |
| 0.000 | 18 → | None | | 0.084 | 85 |
| 0.250 | 13 → | R | 43 | 0.200 | 69 |
| 0.250 | 14 → | None | | 0.200 | 74 |
| 0.866 | 22 → | | | 0.334 | 114 |
| 0.866 | 23 → | None | | 0.334 | 114 |
| 0.872 | | 22AR | 82 | | |
| 1.484 | 15 → | AR | 44 | 0.182 | 73 |
| 1.484 | 16 → | None | 48 | 0.182 | 76 |
| 1.800 | 11 → | AR | 34 | 0.134 | 61 |
| 1.800 | 12 → | None | | 0.134 | 60 |
| 2.200 | 1 → | R | 65 | 0.250 | 46 |
| 2.208 | 2 → | AR | 68 | 0.258 | 49 |
| 2.208 | 10 → | R | 54 | 0.250 | 62 |
| 2.224 | 6 → | R | 55 | 0.250 | 47 |
| 2.234 | 7 → | R | 80 | 0.250 | 54 |
| 2.242 | 4 → | R | 57 | 0.250 | 48 |
| 2.250 | 3 → | R | 48 | 0.250 | 52 |
| 2.266 | 9 → | R | 57 | 0.250 | 57 |
| 2.284 | 5 → | AR | 47 | 0.250 | 47 |
| 2.284 | 8 → | R | 55 | 0.250 | 51 |
| Total | | | 859 | 4.376 | |

Annex C

MATERIEL

Annex C

MATERIEL

This annex describes all candidate and Soviet weapons and ammunition used in the SAWS field experiment and the procedures for control and maintenance of weapons. Table C-1 presents a comparative description of the SAWS weapons. Tables C-2 through C-5 compare the weights, dimensions and firing characteristics of rifles, automatic rifles, and bipod and tripod machineguns. Table C-6 compares the ammunition used on the basis of component weights and certain ballistic characteristics. Table C-7 records the results of accuracy tests. Tables C-8 through C-21 present attrition data reflecting parts replaced and the interval and rate of part replacements. Table C-22 tabulates the results of fouling tests for M16E1 rifles.

1. EXPERIMENTATION WEAPONS

All weapons used in the experiment were air cooled, gas operated shoulder weapons. Individual characteristics of the different weapons are listed in Table C-1 and shown in Figures C-1 through C-7. Parenthetical nomenclature identifies the descriptive terms used for these weapons throughout the report.

a. US 7.62mm Weapons

The following standard US small arms were used in the experiment: the M14 and M14E2 rifles and the M60 bipod and tripod mounted machinesguns. They all fire the standard 7.62mm NATO cartridge.

The stock of the M14E2 rifle is modified to a straight line design and has a front end hand grip and rubber recoil pad. The M2 adjustable bipod is added as an easily detached component. A stabilizer assembly is installed over the flash suppressor on the rifles.

b. Colt 5.56mm Weapons

The Colt weapon family consists of three weapons, two of which were used: the M16E1 rifle and the Colt automatic rifle. The gas system that actuates these weapons eliminates the conventional gas piston and cylinder. The charging handle is centered in the rear of an aluminum receiver assembly. The rear sight has two apertures, one for ranges up to 300 meters and one for ranges from 300 to 500 meters. The rifle and automatic rifle are identical, except that the automatic rifle has a heavier barrel and a different buffer group.

c. Stoner 63 5.56mm Weapons

The following Stoner 5.56 weapons were used:

- 1) Rifle -- its rear sight has two apertures, like the Colt weapons -- one for ranges up to 300 meters and one for ranges from 300 to 500 meters
- 2) Automatic Rifle -- its ammunition is fed from the top of the receiver and ejected to the left, the sights offset to the left to accommodate the feeding system
- 3) Bipod Mounted Machinegun
- 4) Tripod Mounted Machinegun -- the same as the bipod mounted machinegun, except that a cradle adaptor allows it to be used with the standard M122 bipod

Sheet metal stamping and welding are used in the manufacture of the Stoner family. The weapons consist of 16 assemblies. There is a basic component group for all the weapons. The various configurations can be formed by adding assemblies to the basic unit. The family also includes a folding stock version of the rifle and a solenoid operated machinegun for use on vehicles; neither of these was evaluated. A 30-round aluminum magazine is being developed. A few of the magazines were provided for informal evaluation, but only the 30-round steel magazines were used in the experiment.

d. Soviet 7.62mm Weapons

The following Soviet-type 7.62mm weapons were used in the experiment:

- 1) AK47 Assault Rifle
- 2) RPD Bipod Mounted (squad level machinegun)
- 3) DPM Bipod Mounted (company level machinegun)

The AK47 rifle and the RPD machinegun fire the Soviet M1943 intermediate cartridge. The DPM machinegun fires the Soviet M1908 cartridge.

2. **CONTROL AND MAINTENANCE OF FIELD EXPERIMENTATION WEAPONS**

Weapons were stored in four van-type trailers for ease of transportation and security during the field experiment. Racks designed and

fabricated locally to support the weapons were adjustable to weapons of various lengths. Each rack accommodated 20 rifles or 10 machineguns (Figure C-8). The weapons were guarded at all times.

Maintenance of weapons was under the control and supervision of one officer, four NCOs, and 14 armorer artificers. These personnel were trained in a designated weapon system and then cross-trained in the other weapon systems to provide flexibility. Spare parts for the weapons were stored in three shop trucks used as weapon repair facilities. Since spare parts were not available for the Soviet weapons, extra weapons were used as a source for parts as necessary.

Weapon data books were established for each weapon to record by date* the mode of fire (semiautomatic or automatic) and the number of rounds fired: 1) the amount of ammunition expended in each weapon, 2) the malfunctions occurring, 3) the parts replaced in the weapons, 4) names of experimentation subjects assigned to the weapon, and 5) zeroing data.

Cleaning of weapons was closely supervised by the armorer artificers. Experimentation subjects cleaned their weapons after each firing. The procedures followed were those set forth in FM 23-8, May 1965; FM 23-9, January 1965; FM 23-67, October 1964; TM 9-1005-249-14, and Special Text 23-67, 1 July 1965. Uniform cleaning procedures were enforced.

3. AMMUNITION

Ammunition for the experiment was stored in the Fort Ord Ammunition Supply Point (ASP) and drawn as required. A building within the ASP was used for loading magazines and belts for delivery to the experimentation ranges.

Three NCOs and 18 enlisted men were used to operate the central magazine loading and ammunition issue facility. These personnel were used to hand load magazines because of a lack of mechanical loaders. Thirteen mechanical magazine loaders were available for Stoner 30-round magazines. These loaders were also used on the Colt 20-round magazines.** The use of a central magazine loading facility allowed the magazines and ammunition lots to be controlled. Magazines not used during a day's firing were marked for identification and used the next day, to avoid keeping magazine springs compressed any longer than necessary and to establish uniform treatment of magazines. Magazines identified as a cause of a malfunction were removed from service and secured for examination later.

* Time was recorded in the weapon's reliability report record.

** A Colt magazine loader was furnished independently by the Colt representative but not used in the experiment.

The ammunition pouch used with the M14 rifle did not have a counterpart for the Colt, Stoner, and Soviet weapons. Suitable pouches for these weapons were designed at USACDCEC. Pouches for AK47 magazines were fabricated by the Natick Laboratory, Natick, Massachusetts. Those for the Colt and Stoner weapons were fabricated by Richmond General Depot, Richmond, Virginia. Both pouches are shown in Figure C-9.

Ammunition used in the experiment was identified by type, caliber, model, ammunition lot number, and manufacturer. Appropriate control of ammunition lots was maintained to avoid mixing lot numbers. Magazines delivered to the range were packed in ammunition crates and appropriately marked to designate squad usage, experimentation situation, date, caliber, type of ammunition, and lot number. Residue from firing was repacked and returned to ASP.

4. METAL LINK BELT

Machinegun ammunition was issued in metal link belts -- the M13 link for 7.62mm's, a scaled down version of the M13 link for 5.56mm's, and 7.62mm nondisintegrating links for the Soviet RPD.

The links initially received for the Stoner machinegun were significantly different from design specifications of the Cadillac-Gage Company. These manufactured links caused five to nine separations per 100-round belt. In one instance, there were 17 separations. USACDCEC discovered this error and initiated action to have Cadillac-Gage make new links. Experimental record runs for the rifle squads were conducted using the faulty links. During this time 100,000 correctly made links were manufactured by Cadillac-Gage and delivered to the Army Weapons Command. Of these, 30,000 were subsequently delivered to USACDCEC and used for the machinegun squad record runs. The limited number of links available required that the links be salvaged and reused.

Only 250 nondisintegrating links were available for use with the RPD until January 1966, when 1235 additional links were received.

Table C-1 SAWS FIELD EXPERIMENTATION WEAPONS COMPARED

| Weapons | Feeding | Number rounds in magazine or belt | Mode of Fire | | Bolt remains open after last round | Locking rotating bolt | Fires from closed bolt position | Fires from open bolt position | Gas system location | | Capable of launching grenades | Quick-change barrel | Spare barrel kit | Flash suppressor | Sights | | |
|---|------------------------|-----------------------------------|--------------|-----------|------------------------------------|-----------------------|---------------------------------|-------------------------------|---------------------|-------------|-------------------------------|---------------------|------------------|------------------|---|-------------------------------|------------------------------------|
| | | | Auto-matic | Semi-auto | | | | | Under barrel | Over barrel | | | | | Rear sight adjustable for windage and elevation | Permanent affixed front sight | Front sight adjustable for zeroing |
| US STANDARD | | | | | | | | | | | | | | | | | |
| US rifle, 7.62mm M14 (M14 rifle) ^{a,b} | Magazine | 20 | x | x | x | x | x | | x | | x | | | x | x | | |
| US rifle, 7.62mm M14E2 (M14E2 rifle) ^{a,b} | Magazine | 20 | x | x | x | x | x | | x | | x | | | x ^c | x | x | |
| US machinegun, 7.62mm M60 bipod-mounted (M60 bipod machinegun) ^a | Disintegrating belt | 100 rd band-olever 200 rd box | x | | | x | | x | x | | | x | x | x | x | x | |
| US machinegun 7.62mm M60 tripod-mounted (M60 tripod machinegun) ^a | Disintegrating belt | 100 rd band-olever 200 rd box | x | | | x | | x | x | | | x | x | x | x | x | |
| COLT | | | | | | | | | | | | | | | | | |
| Rifle, 5.56mm, M16E1 (M16E1 rifle) ^a | Magazine | 20 or 30 | x | x | x | x | x | | x | x | x | | | x | x | | |
| Automatic rifle, 5.56mm CAR-15 (Colt automatic rifle) ^a | Magazine | 20 or 30 | x | x | x | x | x | | | x | x | | | x | x | | |
| STONER | | | | | | | | | | | | | | | | | |
| Rifle, 5.56mm Stoner 63 (Stoner rifle) ^a | Magazine | 30 | x | x | x | x | x | | | x | x | | | x | x | | |
| Automatic rifle, 5.56mm Stoner 63 (Stoner automatic rifle) ^a | Magazine | 30 | x | | | x | x | x | | | x | x | | x | x | | |
| Machinegun, 5.56mm Stoner 63 bipod-mounted (Stoner bipod machinegun) | Disintegrating belt | 150 rd band-olever 900 rd box | x | | | x | x | x | | | x | x | x | x | x | x | |
| Machinegun, 5.56mm Stoner 63 tripod-mounted (Stoner tripod machinegun) ^a | Disintegrating belt | 150 rd band-olever 900 rd box | x | | | x | x | x | | | x | x | x | x | x | x | |
| SOVIET | | | | | | | | | | | | | | | | | |
| Rifle, 7.62mm, AK47 (AK47 rifle) ^{a,b} | Magazine | 30 | x | x | | x | x | | x | x | | | | | | x | x |
| Machinegun, (squad level), 7.62mm, RPD, bipod-mounted (RPD machinegun) ^{a,b} | Nondisintegrating belt | 100 | x | | | | x | x | | | | | | | | x | x |
| Machinegun, (company level) 7.62mm DPM bipod-mounted (DPM machinegun) ^{a,b} | Drum magazine | 47 | x | | | | x | x | | | | x | | x | | x | x |

^a Abbreviated nomenclature used throughout report^b Wood stock^c Muzzle compensator

Table C-2 COMPARATIVE DATA--RIFLES

| Item | M14 | M16E1 | Stoner | AK47 |
|---|-------------------|--|--------------------|-------------------|
| <u>Weights (lb)</u> | | | | |
| Weapon ^a | 9.69 | 6.87 | 8.25 | 8.75 |
| With loaded magazine | 11.27 | 7.55 (20 rd) 7.87 (30 rd) | 9.52 (30 rd) | 10.87 (30 rd) |
| Cartridge, ball duplex | 0.0540 0.0570 | 0.0250 | 0.0250 | 0.0397 |
| Steel magazine, unloaded | 0.50 (20 rd) | -- | 0.52 (30 rd) | 0.93 (30 rd) |
| Aluminum magazine, unloaded | -- | 0.18 (20 rd) 0.25 (30 rd) | -- | -- |
| Steel magazine, loaded | 1.58 (20 rd) | -- | 1.27 (30 rd) | 2.12 (30 rd) |
| Aluminum magazine, loaded | -- | 0.68 (20 rd) 1.00 (30 rd) | -- | -- |
| One cartridge plus share of magazine (steel) | 0.0790 (20 rd) | -- | 0.0423 (30 rd) | 0.0706 (30 rd) |
| One cartridge plus share of magazine (aluminum) | -- | 0.0341 (20 rd) 0.0333 (30 rd) | -- | -- |
| Weapon with 100 rounds in magazines | 17.59 | 11.02 ^b (20 rd) 11.12 ^b (30 rd) | 14.15 ^b | 16.44 |
| Number of rounds at M14 system weight | 100 (20 rd) | 290 (20 rd) 300 (30 rd) | 180 (30 rd) | 120 (30 rd) |

Table C-2 COMPARATIVE DATA--RIFLES (Continued)

| Item | M14 | M16E1 | Stoner | AK47 |
|---|---|-------------------|-------------------|--------------------|
| Sling | 0.31 | 0.31 | 0.31 | 0.38 |
| Bipod | -- | 0.50 | 0.94 | -- |
| Bipod case | -- | 0.25 | 0.38 | -- |
| Dimensions | | | | |
| Total length with flash suppressor | 44.25 | 38.75 | 40.25 | 34.25 ^c |
| Barrel length (inches) | 22.00 | 21.00 | 21.67 | 16.39 |
| Diameter of bore (millimeters) | 7.62 | 5.56 | 5.56 | 7.62 |
| Rifling (inches) | 4R 1-12 | 6R 1-12 | 6R 1-12 | 4R 1-9.8 |
| Height of sight above barrel (inches) | 0.94 | 2.44 | 2.06 | 1.81 |
| Sight radius (inches) | 26.56 | 19.75 | 21.38 | 14.88 |
| Firing Characteristics^d | | | | |
| Muzzle velocity (fps) | 2800 | 3250 | 3250 | 2400 |
| Muzzle energy (ft-lb) | 2435 | 1300 | 1300 | 1630 |
| Chamber pressure (psi) | 50,000 | 52,000 | 52,000 | Not Available |
| Cyclic rate (rpm) | 700-750 | 800-850 | 740-800 | 600 |
| Mode of fire | Semiauto (Selector can be installed to permit auto fire) | Semiauto and auto | Semiauto and auto | Semiauto and auto |

^a Includes sling only^b Includes bipod and bipod case^c No flash suppressor^d Rated, not measured

NOTE: Actual weighed weight, average of weapons:

US M14—SN 1522264, 1532819, Harrington and Richardson,
SN 517524 Springfield

M14E2—SN 1279398, 1276089, 1282720, Winchester

Table C-2 COMPARATIVE DATA--RIFLES (Concluded)

M60—SN8776, 70109, 69861, SACO - Lowell Shops

Colt M16E1—SN 15225, 147616, 152115, Colt Firearms Division

Colt Automatic Rifle—SN 014786, 014750, 014761, Colt Firearms Division

Stoner Rifle—SN 000643, 000701, 000642, Cadillac Gage

Stoner Automatic Rifle—SN 000788, 000815, 000841, Cadillac Gage

Stoner Bipod MG—SN 000976, 000782, 000975, Cadillac Gage

Stoner Tripod MG—SN 000782, 000991, 000976, Cadillac Gage

Soviet Type AK47—SN 7899, Chicom, SN 2883, 4255, Soviet

Soviet Type RPD—SN 764341, 763410, 219374, Chicom

Soviet Type DPM—SN 203931, 209802, Chicom

Scales Used:

Scale Ammo—Ohaus, Precision Loading Scale Model 505

(No SN) located at 6th Army Marksmanship Unit (All ammo weighed)

Chatillon 20 pound—1 ounce capacity, type 027 (Team II - Tech

Weapons) (Weighed three weapons of each type on this scale)

Postal Scale—70 pound capacity, manufactured by Trinar, located at

Fort Ord Post Office. (One weapon each type weighed to check for accuracy).

Torision Balance Scale—Style 255, capacity 4 1/2 kilo, SN B75259

located at Fort Ord Pharmacy (five of every type accessory weighed, except three plastic Stoner bandoleers)

Table C-3
COMPARATIVE DATA—AUTOMATIC RIFLES

| Item | M14E2 | Colt | Stoner |
|---|--------------------|--|--------------------|
| <u>Weights (lb)</u> | | | |
| Weapon ^a | 12.56 ^b | 8.00 | 10.62 |
| With loaded magazine | 14.14 | 8.68 (20 rd) 9.00 (30 rd) | 11.89 |
| Cartridge, ball duplex | 0.0540 0.0570 | 0.0250 -- | 0.0250 -- |
| Steel magazine, unloaded | 0.50 (20 rd) | -- | 0.52 (30 rd) |
| Aluminum magazine, unloaded | -- | 0.18 (20 rd) 0.25 (30 rd) | -- |
| Steel magazine, loaded | 1.58 (20 rd) | -- | 1.27 (30 rd) |
| Aluminum magazine, loaded | -- | 0.68 (20 rd) 1.00 (30 rd) | -- |
| One cartridge plus share of magazine (steel) | 0.0730 | -- | 0.0423 |
| One cartridge plus share of magazine (aluminum) | -- | 0.0341 (20 rd) 0.0333 (30 rd) | -- |
| Weapon with 260 ^c rounds in magazines | 33.10 | 17.59 ^d (20 rd) 17.50 ^a (30 rd) | 23.12 ^d |

Table C-3
COMPARATIVE DATA—AUTOMATIC RIFLES (Continued)

| Item | M14E2 | Colt | Stoner |
|---|--------------------|--------------------------------------|------------------|
| Number of rounds at M14E2 system weight (33.10 lb) | 260 | 714 (20 rd) 724 (30 rd) | 492 |
| Number of rounds rounded to nearest magazine not exceeding 33.10 lb | 260 | 700 (20 rd) 720 (30 rd) | 480 |
| Number of rounds at M14 systems weight (17.59 lb) in rifle role | 60 | -- | -- |
| Sling | 0.43 | 0.31 | 0.31 |
| Bipod | considered organic | 0.50 | 0.94 |
| Bipod case | none | 0.25 | 0.38 |
| <u>Dimensions (inches)</u> | | | |
| Total length with flash suppressor | 44.13 | 38.75 | 40.31 |
| Barrel length | 22.00 | 21.00 | 21.67 |
| Height of sight above barrel | 0.94 | 2.44 | 1.50 |
| Sight radius | 26.56 | 19.75 | 21.44 |
| Rifling | 4R 1-12 | 6R 1-12 | 6R 1-12 |
| <u>Firing Characteristics^e</u> | | | |
| Caliber | 7.62mm | 5.56mm | 5.56mm |
| Muzzle velocity (fps) | 2800 | 3250 | 3250 |
| Muzzle energy (ft-lb) | 2435 | 1285 | 1300 |
| Cyclic rate (rpm) | 700-750 | 800-850 | To be determined |

Table C-3
COMPARATIVE DATA—AUTOMATIC RIFLES (Concluded)

| Item | M14E2 | Colt | Stoner |
|------------------------|------------------------|------------------------|-----------|
| Chamber pressure (psi) | 50,000 | 52,000 | 52,000 |
| Mode of fire | Semiauto, Automatic | Semiauto, Automatic | Automatic |

^a Includes sling only

^b Bipod organic to weapon

^c Current Army standard ammunition basic load for M14E2

^d Includes bipod and bipod case

^e Rated, not measured

NOTE: See note, Table C-2, for information on weapons weighed and scales used

Table C-4
COMPARATIVE DATA—BIPOD MOUNTED MACHINEGUNS

| Item | M60 | Stoner | RPD |
|--|---|---|---|
| <u>Weights (lb)</u> | | | |
| Weapon ^a | 24.37 | 12.38 | 14.93 |
| Weapon with ammunition in containers | 31.77 (100 rd in bandoleer) | 17.37 (150 rd in bandoleer) | 20.66 (100 rd in drum) |
| | 41.06 (200 rd in metal box) | 44.56 (900 rd in metal box) | -- |
| Cartridge, ball duplex | 0.0540 0.0570 | 0.0250 -- | 0.0397 -- |
| Ammunition container unloaded | 0.87 (100 rd bandoleer) | 0.56 (150 rd bandoleer) | 1.13 (100 rd steel drum) |
| | 3.63 (200 rd M19A1 in metal box) | 5.63 (900 rd M2A1 in metal box) | |
| Ammunition container loaded | 7.40 (100 rd in bandoleer) | 4.99 (150 rd in bandoleer) | 5.73 (100 rd in steel drum) |
| | 16.69 (200 rd in metal box) | 32.18 (900 rd in metal box) | |
| Link | 0.0113 | 0.0045 | 0.0063 |
| One cartridge (ball), link and share of container | 0.0740 | 0.0332 | 0.0573 |
| Number of rounds at M14E2 system weight (33.10 lb) as used in automatic rifle role ^e | 120 ^b | 600 | 300 (in 3 drums) |
| Number of rounds available at machinegun system weight (129.65 lb) ^c | 1000 129.28 lb (ammo in metal boxes) | 2850 129.06 lb (ammo in metal boxes) | 1833 129.62 lb (ammo in steel drums) |
| | 1123 129.60 lb (ammo in bandoleers) | 3059 129.63 lb (ammo in bandoleers) | |

Table C-4
BIPOD MOUNTED MACHINEGUN (Concluded)

| Item | M60 | Stoner | RPD |
|--|------------------|-----------|----------------------|
| Sling weight | 0.31 | 0.31 | 0.37 |
| Bipod weight | Not removable | 0.94 | Not removable |
| Bipod case | -- | 0.38 | -- |
| <u>Dimensions (inches)</u> | | | |
| Total length with flash suppressor | 43.38 | 40.31 | 40.75 ^d |
| Barrel length | 25.75 | 21.67 | 20.50 |
| Height of sight above barrel | 2.75 | 1.44 | 1.93 |
| Sight radius | 21.38 | 21.88 | 23.50 |
| Rifling | 4R1-12 | 6R1-12 | 4R1-9.8 ^e |
| <u>Firing Characteristics^f</u> | | | |
| Caliber | 7.62mm | 5.56mm | 7.62mm |
| Muzzle velocity (fps) | 2800 | 3250 | 2434 |
| Muzzle energy (ft-lb) | 2435 | 1300 | Not available |
| Cyclic rate (rpm) | 550 | 650-850 | 700-780 |
| Chamber pressure (psi) | 52,000 | 52,000 | Not available |
| Mode of fire | Automatic | Automatic | Automatic |

^a Includes bipod and sling

^b An ammunition bearer armed with .45 caliber pistol replaced a rifleman allowing combined system weight of rifleman (17.59 lb) and gunner (33.10 lb) to carry 294 rounds for total weight of 50.63 lb

^c Based on weight of M60 tripod MG, spare barrel kit, 800 rounds ammunition in metal boxes and two .45 caliber pistols for assistant gunner and ammunition bearer

^d No flash suppressor

^e Approximate

^f Rated, not measured

NOTE: See note, Table C-2, for information on weapons weighed and scales used

Table C-5
COMPARATIVE DATA — TRIPOD MOUNTED MACHINEGUNS AND DPM

| Item | M60 | Stoner | DPM |
|---|--|--|-----------------------------------|
| <u>Weights (lb)</u> | | | |
| Weapon ^a | 41.43 | 30.16 (with buttstock) | 22.00 |
| Weapon with ammunition in container | 48.83 (100 rd in bandoleer) | 35.17 Wpn with butt- stock (150 rd bandoleer) | 27.70 (47 rd in steel drum) |
| | 58.12 (200 rd in metal box) | 62.35 Wpn with butt- stock (900 rd metal box) | |
| Cartridge, ball duplex | 0.0540 0.0570 | 0.0250 -- | 0.0495 -- |
| Ammunition container unloaded | 0.87 (100 rd bandoleer) | 0.56 (150 rd bandoleer) | 3.38 (47 rd in steel drum) |
| | 3.63 (200 rd M19A1 metal box) | 5.63 (900 rd M2A1 metal box) | 3.38 |
| Ammunition container loaded | 7.40 (100 rd in bandoleer) | 4.99 (150 rd in bandoleer) | 5.70 (47 rd in steel drum) |
| | 16.69 (200 rd in metal box) | 32.18 (900 rd in metal box) | |
| Link | 0.0113 | 0.0045 | None |
| One cartridge, link plus share of container | 0.0740 | 0.0332 | 0.121 |
| Number of rounds at M60 system weight (129.65 lb) ^b | 800 (ammo in metal boxes) | 2298 (in metal boxes) | 752 (in drums) |
| | 900 (ammo in bandoleer) | 2545 (in bandoleer) | |

Table C-5
TRIPOD MOUNTED MACHINEGUNS AND DPM (Concluded)

| Item | M60 | Stoner | DPM |
|--|-----------|-----------|---------------|
| Tripod complete | 17.37 | 19.37 | -- |
| Spare barrel | 8.63 | 4.12 | 4.88 |
| Spare barrel kit | 12.56 | 5.87 | Unknown |
| <u>Dimensions</u> | | | |
| Total length with flash suppressor (inches) | 43.38 | 38.31 | 50.00 |
| Barrel length (inches) | 25.75 | 21.69 | 27.75 |
| Height of sight above barrel (inches) | 2.75 | 1.44 | 1.75 |
| Sight radius (inches) | 21.38 | 21.69 | 24.25 |
| Rifling | 4R 1-12 | 6R 1-12 | Unknown |
| <u>Weapon Characteristics^c</u> | | | |
| Caliber | 7.62mm | 5.56mm | 7.62mm |
| Muzzle velocity (fps) | 2800 | 3250 | 2756 |
| Cyclic rate (rpm) | 550 | 650-850 | 550 |
| Chamber pressure (psi) | 52,000 | 52,000 | Not available |
| Mode of fire | Automatic | Automatic | Automatic |

^a M60 and Stoner Tripod Mounted, belt fed; DPM bipod mounted, drum fed

^b Based on weight of M60 tripod MG, spare barrel kit, 800 rounds ammunition in metal boxes and two .45 caliber pistols for assistant gunner and ammunition bearer

^c Rated, not measured

NOTE: See note, Table C-2, for information on weapons weighed and scales used

Table C-6 COMPARATIVE DATA--AMMUNITION

| Cartridge and Model | Country of Origin | Projectile | | Propellant Wt (gr) ^a | Case Wt (gr) ^{ab} | Cartridge Wt (gr) ^a | Ignition* Range (yd) | Burnout* Range (yd) | Velocity* (fps) | Chamber Pressure (psi) ^c |
|----------------------------|----------------------|------------|------------------------------------|---------------------------------|----------------------------|--------------------------------|----------------------|---------------------|--|-------------------------------------|
| | | Type | Wt (gr) ^a | | | | | | | |
| 7.62mm, NATO M80 | US | Ball | 148 | 46 | 126 | 380 | -- | -- | 2,750 | 50,000 |
| 7.62mm, NATO M62 | US | Tracer | 141 | 46 | 185 | 372 | 100 | 850 | 2,690 | 44,500 |
| 7.62mm, M5138 | US | Duplex | 82 ^c 83 ^d | 46 | 189 | 401 | -- | -- | 2,700 ^c 2,500 ^d | -- |
| 5.56mm, M193 | US | Ball | 55 | 28 | 93 | 176 | -- | -- | 3,250 | 50,900 |
| 5.56mm, M198 | US | Tracer | 52 | 24 | 95 | 171 | Muzzle | 180 | 3,200 | 48,400 |
| Soviet-type 7.62mm, M1943 | Unknown ^f | Ball | 123 | 31 | 108 | 262 | -- | -- | 2,400 | Unknown |
| Finnish, 7.62mm, M60 | Finland ^g | Ball | 123 | 26 | 130 | 279 | -- | -- | 2,400 | Unknown |
| Soviet-type, 7.62mm, M1943 | Unknown ^f | Tracer | 115 | 30 | 106 | 253 | Unknown | Unknown | Unknown | Unknown |
| Soviet-type, 7.62mm, M1908 | Unknown ^f | Ball | 140 | 53 | 145 | 347 | -- | -- | 2,750 | Unknown |

* Rated not measured at HQ USA/CDEC

^a Values averaged from weighed samples of each ammunition type^b Primer weight included^c Front projectile^d Rear projectile^e 76° F^f Can. in packed^g Finnish ammunition cited in TB 231-5-1 Citing of Foreign Material (N) 1980
70M-13-1255-7-7-62-1 as M60 received at USA/CDEC as M1943 Type^h Miscellaneous packed

Table C-7
COMPARATIVE DATA--SAWS WEAPONS ACCURACY TEST
(Firing from 100 meters, ten rounds per target)

| Type Weapon* | Ammunition | Firer | Number of Weapons | Number of Targets | Mean Radius | | Extreme Horizontal | | Extreme Vertical | | Extreme Spread | | Rounds Fired Prior to Test | |
|-----------------|------------|----------|----------------------|----------------------|----------------|-----|-----------------------|------|---------------------|------|-------------------|------|-------------------------------|----|
| | | | | | AV | SD | AV | SD | AV | SD | AV | SD | AV | SD |
| M14 | 7.62mm | Number 1 | 24 | 24 | 2.52 | .70 | 7.0 | 3.04 | 6.5 | 3.05 | 9.1 | 3.79 | 802 | |
| | Lot Number | Number 2 | 24 | 24 | 2.37 | .60 | 7.3 | 2.63 | 5.8 | 2.32 | 8.6 | 2.55 | | |
| | RA 5374 | Both | 24 | 48 | 2.44 | .65 | 7.2 | 2.82 | 6.1 | 2.64 | 8.3* | 2.87 | | |
| M14E2 | 7.62mm | Number 1 | 21 | 21 | 2.15 | .55 | 6.5 | 1.52 | 5.1 | 1.83 | 7.3 | 1.87 | 532 | |
| | Lot Number | Number 2 | 21 | 21 | 2.31 | .68 | 6.2 | 3.14 | 5.5 | 1.47 | 7.8 | 2.82 | | |
| | RA 5374 | Both | 21 | 42 | 2.23 | .61 | 6.4 | 2.45 | 5.3 | 1.93 | 7.5 | 2.38 | | |
| M16E1 | 5.56mm | Number 1 | 25 | 25 | 2.40 | .61 | 6.4 | 2.02 | 6.3 | 1.87 | 7.9 | 2.05 | 1066 | |
| | Lot Number | Number 2 | 25 | 25 | 1.81 | .40 | 4.2 | .88 | 4.8 | 1.47 | 5.5 | 1.33 | | |
| | WCC 6098 | Both | 25 | 50 | 2.11 | .59 | 5.3 | 1.90 | 5.6 | 1.82 | 6.7 | 2.10 | | |
| Colt AR | 5.56mm | Number 1 | 3 | 3 | 1.95 | .64 | 6.7 | 3.34 | 4.9 | 2.59 | 7.9 | 4.35 | 267 | |
| | Lot Number | Number 2 | 3 | 3 | 1.42 | .37 | 2.8 | 1.21 | 4.7 | 1.42 | 5.3 | 1.00 | | |
| | WCC 6098 | Both | 3 | 6 | 1.40 | .87 | 4.8 | 3.09 | 4.8 | 1.87 | 6.6 | 3.16 | | |
| Stoner Rifle | 5.56mm | Number 1 | 24 | 24 | 2.24 | .68 | 6.1 | 1.93 | 5.6 | 2.34 | 7.4 | 2.19 | 1875 | |
| | Lot Number | Number 2 | 24 | 24 | 1.72 | .39 | 5.0 | 2.11 | 4.7 | 1.49 | 6.2 | 2.25 | | |
| | WCC 6098 | Both | 24 | 48 | 1.98 | .61 | 5.5 | 2.10 | 5.1 | 1.99 | 6.3 | 2.29 | | |
| Stoner AR | 5.56mm | Number 1 | 3 | 3 | 4.64 | .63 | 14.2 | 5.34 | 8.6 | 2.23 | 14.5 | 2.06 | 2658 | |
| | Lot Number | Number 2 | 3 | 3 | 4.01 | .38 | 9.6 | 2.15 | 9.9 | 3.25 | 12.1 | .17 | | |
| | WCC 6098 | Both | 3 | 6 | 4.32 | .58 | 11.9 | 3.29 | 9.2 | 2.59 | 13.3 | .38 | | |

* This accuracy is characteristic of the M14 weapon - M80 ammunition. See Infantry and Aircraft Weapons Division report on tests for Ad Hoc Committee on accuracy and targeting of 7.62mm ammunition and M14 Rifles, Report No. DPS-471, March 1962, paragraph 3.2, page 17; paragraph 3.3, page 25; table XIV, page 27; paragraph 3.8.4., page 83-84.

NOTE: Measurements in inches

AV - Average

SD - Standard deviation

Table C-7
COMPARATIVE DATA--SAWS WEAPONS ACCURACY TEST (Concluded)
(Firing from 100 meters, ten rounds per target)

| Type Weapon | Ammunition ^{a b} | Firer | Number of Weapons | Number of Targets | Mean Radius | | Extreme Horizontal | | Extreme Vertical | | Extreme Spread | | Known Rounds Fired Prior to Test ^c | |
|----------------|-----------------------------|----------|----------------------|----------------------|----------------|-------------|-----------------------|--------------|---------------------|--------------|-------------------|--------------|--|--------------|
| | | | | | AV | SD | AV | SD | AV | SD | AV | SD | AV | SD |
| AK47 | Finnish Ball ChiCom Ball | Number 1 | 26 10 | 26 10 | 2.36 2.36 | .49 .49 | 6.10 6.05 | 1.32 1.48 | 6.10 6.51 | 2.20 1.53 | 7.70 8.03 | 1.97 1.73 | 3300 9885 | 4339 2107 |
| | ChiCom Tracer ChiCom API | | 26 10 | 26 10 | 2.63 2.50 | .82 1.54 | 6.20 6.41 | 1.66 4.31 | 7.00 7.18 | 4.22 7.51 | 8.60 8.77 | 3.73 7.13 | 3345 10107 | 4416 2163 |
| | Finnish Ball ChiCom Ball | Number 2 | 26 10 | 26 10 | 2.52 2.79 | .58 .68 | 5.70 6.26 | 1.49 1.32 | 7.50 7.79 | 2.35 3.04 | 8.50 9.08 | 1.94 2.16 | 3300 9885 | 4339 2107 |
| | ChiCom Tracer ChiCom API | | 26 10 | 26 10 | 2.57 2.27 | .75 .44 | 5.90 4.93 | 1.98 1.38 | 7.20 6.72 | 2.47 1.30 | 8.60 7.30 | 2.65 1.18 | 3345 10107 | 4416 2163 |
| | Finnish Ball ChiCom Ball | Both | 26 10 | 52 20 | 2.44 2.57 | .54 .62 | 5.90 6.16 | 1.41 1.37 | 6.80 7.15 | 2.36 2.43 | 8.10 8.56 | 1.97 1.98 | 3300 9885 | 4339 2107 |
| | ChiCom Tracer ChiCom API | | 26 10 | 52 20 | 2.60 2.39 | .78 1.11 | 6.10 5.67 | 1.91 3.21 | 7.10 6.95 | 3.42 5.25 | 8.60 8.04 | 3.21 5.03 | 3345 10107 | 4416 2163 |

^a Finnish and ChiCom Ball tests conducted jointly for first ten weapons tested.

^b ChiCom tracer and API tests conducted jointly for first ten weapons tested.

^c These weapons were not new when received, and weapon history prior to their receipt is unknown. Numbers listed represent the quantity of rounds fired in each weapon since receipt of the weapon.

Table C-8
PARTS ATTRITION
(US Weapons Family)

| Number Part Replacements per Weapon | M14 | | | M14E2 | | | M60 | | |
|---|-------------------|----------------|--------------------------|-------------------|----------------|--------------------------|-------------------|----------------|--------------------------|
| | Number Weapons | Total Parts | Total Rounds Fired | Number Weapons | Total Parts | Total Rounds Fired | Number Weapons | Total Parts | Total Rounds Fired |
| 0 | 51 | 0 | 109,735 | 52 | 0 | 101,757 | 7 | 0 | 33,041 |
| 1 | 63 | 63 | 196,240 | 17 | 17 | 35,913 | 13 | 13 | 82,784 |
| 2 | 6 | 12 | 21,878 | | | | 12 | 24 | 118,745 |
| 3 | | | | 1 | 3 | 2,676 | 6 | 18 | 68,244 |
| 4 | | | | | | | | | |
| 5 | | | | | | | 1 | 5 | 16,659 |
| 6 | | | | | | | 3 | 18 | 33,835 |
| 7 | | | | | | | 1 | 7 | 16,264 |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |
| 10 | | | | | | | 1 | 10 | 13,336 |
| 11 | | | | | | | | | |
| 12 | | | | | | | | | |
| Total | 120 | 75 | 327,903 | 76 | 20 | 140,346 | 44 | 95 | 382,908 |

| | M14 | M14E2 | M60 |
|--|---------|---------|---------|
| Replacement rate per 1000 rounds | | | |
| All weapons | .228 | .142 | .248 |
| Contributing weapons | .344 | .518 | .271 |
| Mean rounds fired between replacements | | | |
| All weapons | 4,372.0 | 7,017.3 | 4,030.6 |
| Contributing weapons | 2,908.2 | 1,929.5 | 3,682.8 |
| Percent weapons w/o replacements | 42.5 | 74.3 | 15.9 |
| Percent weapons w/replacements | 57.5 | 25.7 | 84.1 |

Table C-9
PARTS ATTRITION
(Colt Weapons Family)

| Number Part Replacements per Weapon | M16E1 | | | Auto Rifle | | |
|-------------------------------------|----------------|-------------|--------------------|----------------|-------------|--------------------|
| | Number Weapons | Total Parts | Total Rounds Fired | Number Weapons | Total Parts | Total Rounds Fired |
| 0 | 52 | 0 | 139,610 | 2 | 0 | 7,108 |
| 1 | 26 | 26 | 73,006 | 8 | 8 | 44,093 |
| 2 | 19 | 38 | 61,918 | 6 | 12 | 35,166 |
| 3 | 7 | 21 | 26,605 | 2 | 6 | 13,630 |
| 4 | 5 | 20 | 23,669 | 1 | 4 | 9,180 |
| 5 | 5 | 25 | 28,221 | 2 | 10 | 15,307 |
| 6 | 1 | 6 | 3,417 | | | |
| 7 | 2 | 14 | 7,839 | 1 | 7 | 6,936 |
| 8 | 2 | 16 | 16,131 | | | |
| 9 | | | | | | |
| 10 | | | | | | |
| 11 | | | | | | |
| 12 | 1 | 12 | 5,803 | | | |
| Total | 120 | 178 | 386,219 | 22 | 47 | 131,426 |

| | M16E1 | Auto Rifle |
|--|--------------------|--------------------|
| Replacement Rate per 1000 Rounds | | |
| All weapons Contributing weapons | .461 .722 | .357 .378 |
| Mean Rounds Fired between Replacements | | |
| All weapons Contributing weapons | 2,169.8 1,385.4 | 2,796.2 2,644.9 |
| Percent weapons w/o replacements | 43.3 | 9.1 |
| Percent weapons w/replacements | 56.7 | 90.9 |

Table C-10
PARTS ATTRITION
(Stoner Weapons Family)

| Number Part Replacements per Weapon | Rifle | | | Auto Rifle | | | MG | | |
|---|-------------------|----------------|--------------------------|-------------------|----------------|--------------------------|-------------------|----------------|--------------------------|
| | Number Weapons | Total Parts | Total Rounds Fired | Number Weapons | Total Parts | Total Rounds Fired | Number Weapons | Total Parts | Total Rounds Fired |
| 0 | 66 | | 161,881 | 16 | | 33,571 | 3 | 0 | 17,866 |
| 1 | 36 | 36 | 123,274 | 2 | 2 | 9,669 | 13 | 13 | 77,455 |
| 2 | 14 | 28 | 43,085 | 1 | 2 | 3,064 | 9 | 18 | 58,882 |
| 3 | 2 | 6 | 6,692 | 1 | 3 | 4,555 | 4 | 12 | 36,641 |
| 4 | 2 | 8 | 7,758 | | | | 6 | 24 | 40,501 |
| 5 | | | | 1 | 5 | 2,588 | 5 | 25 | 28,938 |
| 6 | | | | | | | 1 | 6 | 14,485 |
| 7 | | | | | | | 3 | 21 | 37,982 |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |
| 10 | | | | | | | | | |
| 11 | | | | | | | | | |
| 12 | | | | | | | | | |
| Total | 120 | 78 | 342,690 | 21 | 12 | 53,447 | 44 | 119 | 312,750 |

| | Rifle | Auto Rifle | MG |
|--|---------|------------|---------|
| Replacement rate per 1000 rounds | | | |
| All weapons | .228 | .224 | .380 |
| Contributing weapons | .431 | .603 | .403 |
| Mean rounds fired between replacements | | | |
| All weapons | 4,393.5 | 4,453.9 | 2,628.1 |
| Contributing weapons | 2,318.1 | 1,656.3 | 2,478.0 |
| Percent weapons w/o replacements | 55.0 | 76.2 | 6.8 |
| Percent weapons w/replacements | 45.0 | 23.8 | 93.2 |

Table C-11
PARTS ATTRITION
(Soviet-type Family)

| Number Part Replacements per Weapon | AK47 | | | RPD | | | DPM | | |
|---|-------------------|----------------|--------------------------|-------------------|----------------|--------------------------|-------------------|----------------|--------------------------|
| | Number Weapons | Total Parts | Total Rounds Fired | Number Weapons | Total Parts | Total Rounds Fired | Number Weapons | Total Parts | Total Rounds Fired |
| 0 | 23 | 0 | 131,267 | 2 | 0 | 20,684 | 3 | 0 | 40,839 |
| 1 | 6 | 6 | 55,996 | 3 | 3 | 28,666 | | | |
| 2 | | | | 2 | 4 | 19,531 | | | |
| 3 | | | | 1 | 3 | 19,972 | | | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |
| 6 | | | | | | | | | |
| 7 | | | | | | | | | |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |
| 10 | | | | | | | | | |
| 11 | | | | | | | | | |
| 12 | | | | | | | | | |
| Total | 29 | 6 | 187,263 | 8 | 10 | 88,853 | 3 | 0 | 40,839 |

| | AK47 | RPD | DPM |
|--|----------|---------|---------|
| Replacement Rate per 1000 Rounds | | | |
| All weapons Contributing weapons | .032 | .113 | 0 |
| | .107 | .147 | 0 |
| Mean Rounds Fired between Replacements | | | |
| All weapons Contributing weapons | 31,210.5 | 8,885.3 | Unknown |
| | 9,345.8 | 6,816.9 | Unknown |
| Percent weapons w/o replacements | 79.3 | 25.0 | 100.00 |
| Percent weapons w/replacements | 20.7 | 75.0 | |

Table C-12
PARTS ATTRITION
(Replacement)
M14 RIFLE

| Parts Replaced | Round Interval Between Parts Replacement | | | | | | Total Each Type Part |
|--|---|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------------------|
| | 1 to 1000 | 1001 to 2000 | 2001 to 3000 | 3001 to 4000 | 4001 to 5000 | 5001 to 6000 | |
| Extractor | | 3 | 4 | | | | 7 |
| Firing pin | | | 10 | 11 | 4 | | 25 |
| Butt plate | | 3 | 1 | | | | 4 |
| Bolt | | | 1 | 1 | | | 2 |
| Stock assembly | | 1 | 1 | | | | 2 |
| Pinion assembly | | | 1 | 1 | | | 2 |
| Ejector | | 1 | 5 | | | | 6 |
| Roller, bolt | | 2 | | | | | 2 |
| Windage knob | | | 1 | | | | 1 |
| Bolt pin | | 4 | | | | | 4 |
| Trigger pin | | | 1 | | | | 1 |
| Pin, straight | | 1 | 1 | | | | 2 |
| Set screw, front sight | | | 1 | | | | 1 |
| Selector | | 1 | 1 | | | | 2 |
| Piston, gas | | 1 | | | | | 1 |
| Plug gauge | | | 1 | | | | 1 |
| Retainer pin | | | 1 | | | | 1 |
| Plunger spring | | 1 | | | | | 1 |
| Aperture | | | 1 | | | | |
| Bolt catch | | | 1 | | | | 1 |
| Front sight | | 1 | | | | | 1 |
| Base, rear sight | | | 1 | | | | 1 |
| Operating spring guide | | 1 | | | | | 1 |
| Misc. unidentified parts | | 1 | 3 | 1 | | | 5 |
| Totals | 6 | 21 | 36 | 14 | 4 | 0 | 75 |
| Number weapons firing within round interval | 120 | 120 | 96 | 34 | 11 | 2 | |
| Ratio parts replaced to weapons | 0 | .175 | .375 | .412 | .364 | 0 | |

NOTE: Total rounds fired, 327,903

Table C-13
PARTS ATTRITION
(Replacement)
M14E2 RIFLES

| Parts Replaced | Round Interval Between Parts Replacement | | | | | Total Each Type Part |
|--|--|--------------------|--------------------|--------------------|--------------------|-------------------------------|
| | 1 to 1000 | 1001 to 2000 | 2001 to 3000 | 3001 to 4000 | 4001 to 5000 | |
| Stabilizer | 3 | | | | | 3 |
| Trigger pin | 2 | | | | | 2 |
| Windage knob | | 1 | | | | 1 |
| Gas cylinder | 1 | | | | | 1 |
| Extractor | 1 | | | 1 | | 2 |
| Gas piston | 1 | | | | | 1 |
| Bolt | 2 | | | | | 2 |
| Rear sight set screw | 1 | | | | | 1 |
| Stock, assembly | | 1 | | | | 1 |
| Butt plate | | | 1 | | | 1 |
| Firing pin | 2 | | | | | 2 |
| Lock catch | 1 | | | | | 1 |
| Retainer pin | 1 | | | | | 1 |
| Misc. unidentified parts replaced | 1 | | | | | 1 |
| Totals | 16 | 2 | 1 | 1 | | 20 |
| Number weapons firing within round interval | 70 | 61 | 35 | 9 | 3 | |
| Ratio parts replaced to weapons | .229 | .033 | .029 | .111 | 0 | |

NOTE: Total rounds fired, 140,346

Table C-14
PARTS ATTRITION
(Replacement)
M60 MACHINEGUN

| Parts Replaced | Round Interval Between Parts Replacement | | | | | | | | | | | | | | | | | | Total Each Type Part | |
|---|--|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------------|------------------------|
| | 1 to 1000 | 1001 to 2000 | 2001 to 3000 | 3001 to 4000 | 4001 to 5000 | 5001 to 6000 | 6001 to 7000 | 7001 to 8000 | 8001 to 9000 | 9001 to 10,000 | 10,001 to 11,000 | 11,001 to 12,000 | 12,001 to 13,000 | 13,001 to 14,000 | 14,001 to 15,000 | 15,001 to 16,000 | 16,001 to 17,000 | 17,001 to 18,000 | | 18,001 to 19,000 |
| Bolt plug | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| Operating rod | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 12 |
| assembly | 4 | 2 | 3 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 18 |
| Guide assembly | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 12 |
| Drive spring | | | | | | | | | | | | | | | | | | | | |
| Screw assembly | | | | | | | | | | | | | | | | | | | | |
| Washer | | | | | | | | | | | | | | | | | | | | |
| Washer key | | | | | | | | | | | | | | | | | | | | |
| Firing pin spring | | | | | | | | | | | | | | | | | | | | |
| Fore arm | | | | | | | | | | | | | | | | | | | | |
| Bolt | | | | | | | | | | | | | | | | | | | | 2 |
| Sear retainer pin | | | | | | | | | | | | | | | | | | | | 17 |
| Firing pin | | | | | | | | | | | | | | | | | | | | 2 |
| Bolt, plug pin | | | | | | | | | | | | | | | | | | | | 1 |
| Feed tray | | | | | | | | | | | | | | | | | | | | 1 |
| Stock, bolt | | | | | | | | | | | | | | | | | | | | 1 |
| Ejector | | | | | | | | | | | | | | | | | | | | 1 |
| Extractor | | | | | | | | | | | | | | | | | | | | 1 |
| Slide level spring | | | | | | | | | | | | | | | | | | | | 2 |
| Slide switch | | | | | | | | | | | | | | | | | | | | 2 |
| Misc. unidentified | | | | | | | | | | | | | | | | | | | | 1 |
| parts replaced | | | | | | | | | | | | | | | | | | | | 1 |
| Total | 7 | 7 | 10 | 15 | 9 | 6 | 7 | 3 | 6 | 8 | 4 | 1 | 2 | 0 | 0 | 0 | 4 | 4 | 5 | 95 |
| Number weapons firing within round interval | 44 | 44 | 44 | 42 | 37 | 34 | 30 | 28 | 25 | 24 | 15 | 14 | 9 | 5 | 3 | 2 | 2 | 2 | 2 | 2 |
| Ratio parts replaced to weapons | .159 | .159 | .217 | .357 | .243 | .176 | .233 | .321 | .240 | .333 | .267 | .671 | .222 | 0 | 0 | 0 | 2.000 | | | |

NOTE: Total rounds fired, 140,346

Table C-15
PARTS ATTRITION
(Replacement)
M16E1 RIFLE

| Parts Replaced | Round Interval Between Parts Replacement | | | | | | | | | Total Each Type Part |
|--|--|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------------------|
| | 1 to 1000 | 1001 to 2000 | 2001 to 3000 | 3001 to 4000 | 4001 to 5000 | 5001 to 6000 | 6001 to 7000 | 7001 to 8000 | 8001 to 9000 | |
| Retainer pin | 21 | 18 | 2 | 4 | 3 | | | | | 48 |
| Disconnecter | 5 | 7 | 7 | 7 | 8 | 3 | | | | 37 |
| Firing pin | | 1 | | | | | | | | 1 |
| Cam pin | | 2 | | | | | | | | 2 |
| Bolt | | 2 | 1 | 2 | | | | | | 5 |
| Bolt assy | 2 | | 1 | 1 | | 1 | | | | 5 |
| Ejector spring* | 14 | 5 | | 1 | | | | | | 20 |
| Ejector pin | 1 | | | | | | | | | 1 |
| Ejector | 1 | | | | | | | | | 1 |
| Buffer | | 3 | 4 | 5 | 4 | | | 1 | | 17 |
| Sear (auto) | 1 | | 2 | | 1 | | | | | 4 |
| Spring detent takedown pin | | 1 | | | | 1 | | | | 2 |
| Selector level | | | | 1 | | | | | | 1 |
| Rear sight aperture | 1 | | | | | | | | | 1 |
| Buffer roll pin | | 6 | 1 | | | | | | | 7 |
| Charging handle | | | 1 | | 1 | | | | | 2 |
| Front swivel | 1 | 1 | | | | | | | | 2 |
| Hammer pin | 1 | | | | | | | | | 1 |
| Hammer | 1 | | | | | | | | | 1 |
| Plunger bolt catch | | 1 | | | | | | | | 1 |
| Swivel pin | 2 | 1 | | | | | | | | 3 |
| Stock | 1 | | | | | | | | | 1 |
| Bolt catch | | 1 | | | | | | | | 1 |
| Bolt catch spring | | 1 | | | | | | | | 1 |
| Carrier key | | | | | 1 | | | | | 1 |
| Extractor | 1 | 1 | | 1 | | | | | | 3 |
| Extractor spring | 2 | | 3 | 1 | | | | | | 6 |
| Extractor pin | | | | | 2 | | | 1 | | 3 |
| Totals | 55 | 51 | 22 | 23 | 20 | 5 | 0 | 2 | 0 | 176 |
| Number weapons firing within round interval | 120 | 120 | 86 | 62 | 31 | 13 | 6 | 4 | 2 | |
| Ratio parts replaced to weapons | .458 | .425 | .256 | .371 | .645 | .385 | 0 | .500 | 0 | |

* One hundred and twenty ejector springs were replaced with manufacturers' new springs at one time in all weapons. These are not included in figures above.

NOTE: Total rounds fired, 386,219

Table C-16
PARTS ATTRITION
(Replacement)
COLT AR

| Parts Replaced | Round Interval Between Parts Replacement | | | | | | | | | Total Each Type Part |
|--|--|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------------------|
| | 1 to 1000 | 1001 to 2000 | 2001 to 3000 | 3001 to 4000 | 4001 to 5000 | 5001 to 6000 | 6001 to 7000 | 7001 to 8000 | 8001 to 9000 | |
| Retainer pin | | 3 | | 1 | 1 | 2 | | | | 7 |
| Buffer | 7 | 6 | 3 | 2 | 2 | 1 | | | | 21 |
| Extractor spring | | | 3 | | 1 | 3 | | | | 7 |
| Extractor | | | | | | 1 | | | | 1 |
| Extractor pin | | | 2 | 1 | 1 | | | 1 | | 5 |
| Trigger pin | 1 | | | | | | | | | 1 |
| Bolt | | | 1 | | | | | | | 1 |
| Buffer detent spring | | | | | | 1 | | | | 1 |
| Left hand guard | | | | | | 1 | | | | 1 |
| Firing pin | | | 1 | | | | | | | 1 |
| Sear | | 1 | | | | | | | | 1 |
| Totals | 8 | 10 | 10 | 4 | 5 | 9 | 0 | 1 | 0 | 47 |
| Number weapons firing within round interval | 22 | 22 | 20 | 19 | 16 | 13 | 5 | 2 | 2 | |
| Ratio parts replaced to weapons | .364 | .455 | .500 | .211 | .313 | .692 | 0 | .500 | 0 | |

NOTE: Total rounds fired, 131,420

Table C-17
PARTS ATTRITION
(Replacement)
STONER RIFLES

| Parts Replaced | Round Interval Between Parts Replacement | | | | | | | Total Each Type Part |
|--|--|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------------------|
| | 1 to 1000 | 1001 to 2000 | 2001 to 3000 | 3001 to 4000 | 4001 to 5000 | 5001 to 6000 | 6001 to 7000 | |
| Bolt | | | 1 | | | | | 1 |
| Take down pin | | | | | | 1 | | 1 |
| Extractor | 1 | 3 | 7 | 2 | | 2 | | 15 |
| Extractor pin | | | 1 | | | | | 1 |
| Common pin | 2 | 1 | | | | | | 3 |
| Rings, sight boss | | | | 1 | | | | 1 |
| Rear sight screw | | | | 1 | | | | 1 |
| Gas piston assembly | 2 | | | | | | | 2 |
| Bolt carrier | 2 | 1 | | | | | | 3 |
| Hammer | 1 | 1 | | | 1 | | | 3 |
| Timer | 1 | 1 | 3 | 1 | 1 | | | 7 |
| Cocking handle | | | 1 | | | | | 1 |
| Bolt stop pin | 6 | 3 | 3 | 2 | 1 | | 1 | 16 |
| Bolt stop spring | 3 | 1 | | 1 | | | | 5 |
| Butt stock | | | 1 | | | | | 1 |
| Operating spring guide pin | 2 | | | | | | | 2 |
| Plunger, extractor | | 1 | | | | | | 1 |
| Fore stock | 1 | | | | | | | 1 |
| Barrel | 1 | | | | | | | 1 |
| Front sight spring | 1 | | | | | | | 1 |
| Firing pin | 1 | 2 | 1 | | | | | 4 |
| Bolt stop | 3 | 1 | | 3 | | | | 7 |
| Totals | 27 | 15 | 18 | 11 | 3 | 3 | 1 | 78 |
| Number weapons firing within round interval | 120 | 120 | 88 | 39 | 22 | 10 | 5 | |
| Ratio parts replaced to weapons | .225 | .125 | .205 | .282 | .136 | .300 | .200 | |

NOTE: Total rounds fired, 342,680

Table C-18
PARTS ATTRITION
(Replacement)
STONER AR

| Parts Replaced | Round Interval Between Parts Replacement | | | | | | | Total Each Type Part |
|--|--|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------------------|
| | 1 to 1000 | 1001 to 2000 | 2001 to 3000 | 3001 to 4000 | 4001 to 5000 | 5001 to 6000 | 6001 to 7000 | |
| Fore stock assembly | 1 | | | | | | | 1 |
| Extractor | 1 | | 1 | | 1 | | | 3 |
| Firing pin | 1 | | | 2 | | | | 3 |
| Ejector | | | 1 | | | | | 1 |
| Operating spring guide | | | | 1 | | | | 1 |
| Operating spring | | | | 1 | | | | 1 |
| Driving spring coliar | 1 | | | | | | | 1 |
| Rear sight housing hold pin | 1 | | | | | | | 1 |
| Total | 5 | 0 | 2 | 4 | 1 | 0 | 0 | 12 |
| Number weapons firing within round interval | 21 | 19 | 12 | 7 | 3 | 2 | 1 | |
| Ratio parts replaced to weapons | .238 | 0 | .167 | .571 | .333 | 0 | 0 | |

* Figures included on this chart are for 21 weapons of 22 used (one gun hook lost)

NOTE: Total rounds fired, 53,447

Table C-19
PARTS ATTRITION
(Replacement)
STONER MACHINEGUN

| Parts Replaced | Round Interval Between Parts Replacement | | | | | | | | | | | | | | | | Total Each Type Part |
|--|--|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-----|-------------------------------|
| | 1 to 1000 | 1001 to 2000 | 2001 to 3000 | 3001 to 4000 | 4001 to 5000 | 5001 to 6000 | 6001 to 7000 | 7001 to 8000 | 8001 to 9000 | 9001 to 10,000 | 10,001 to 11,000 | 11,001 to 12,000 | 12,001 to 13,000 | 13,001 to 14,000 | 14,001 to 15,000 | | |
| | | | | | | | | | | | | | | | | | |
| Bolt | 1 | 1 | | 4 | 2 | 3 | | | 2 | 2 | | 1 | | | | 16 | |
| Firing pin | 1 | 1 | | 3 | 2 | 2 | | 1 | 2 | 2 | | 1 | | | | 17 | |
| Bolt carrier | | | | 4 | 1 | | | | | | | 2 | | | | 9 | |
| Ring, sight bores | | | 1 | | | 2 | | | | 1 | | 1 | | | | 12 | |
| Extractor | 1 | 3 | 1 | | 1 | 6 | | 4 | | | | 1 | | | | 23 | |
| Butt stock | | | | | | | | | | 1 | | | | | | 1 | |
| Cover latch lock | 1 | | | | | | | | | | | | | | | 1 | |
| Cover latch spring | | 1 | | | | | | | | | | | | | | 1 | |
| Cover latch knob | | 1 | | | | | | | | | | | | | | 1 | |
| Operating spring guide | 1 | | | | | | | | | | | | | | | 1 | |
| Cocking handle assembly | | | | | | | | | | | | | | 1 | | 1 | |
| Extractor spring | | 1 | | | | 1 | | 1 | | | | | | | | 4 | |
| Plunger extractor | 1 | | | | | | | | 1 | | | | | | | 1 | |
| Gas piston assembly | | 1 | | 1 | 1 | | | | | | | | | | | 3 | |
| Driving rod spring | | | 1 | | | | | | | | | | | | | 1 | |
| Link guide | | | | 1 | | | | | | | | | | | | 1 | |
| Gas piston rings | | | | 1 | | | | | | | | | | | | 1 | |
| Ejector | | 1 | | | | | | | | | | | | | | 1 | |
| Feed tray | | 6 | 10 | 4 | 1 | 2 | 1 | | | | | | | | | 24 | |
| Totals | 6 | 18 | 13 | 20 | 9 | 16 | 9 | 9 | 5 | 7 | 4 | 2 | 0 | 1 | 0 | 119 | |
| Number weapons firing within round interval | 44 | 44 | 44 | 43 | 39 | 29 | 25 | 20 | 14 | 12 | 8 | 5 | 4 | 3 | 2 | | |
| Ratio parts replaced to weapons | .136 | .409 | .295 | .465 | .231 | .552 | .360 | .450 | .357 | .583 | .500 | .400 | 0 | .333 | 0 | | |

NOTE: Total rounds fired, 312,750

Table C-20
PARTS ATTRITION
(Replacement)
AK47 RIFLE

| Parts Replaced | Round Interval Between Parts Replacement | | | | | | | | | | | | | | | | Totals Each Type Part | | | | | | | | | | | | | | |
|--|--|------|--------------------|----|--------------------|----|--------------------|----|--------------------|----|--------------------|------|--------------------|------|--------------------|--|--------------------------------|----------------------|--|------------------------|--|------------------------|--|------------------------|---|------------------------|--|------------------------|--|------------------------|---|
| | 1 to 1000 | | 2001 to 3000 | | 3001 to 4000 | | 4001 to 5000 | | 5001 to 6000 | | 6001 to 7000 | | 7001 to 8000 | | 8001 to 9000 | | | 9001 to 10,000 | | 10,001 to 11,000 | | 11,001 to 12,000 | | 12,001 to 13,000 | | 13,001 to 14,000 | | 14,001 to 15,000 | | 15,001 to 16,000 | |
| | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Extractor | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 |
| Trigger spring | 1 | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | 1 |
| Frost sight | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Sight connector spring | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Dismounting pin | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Totals | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | 6 |
| Number weapons firing within round interval | 29 | 27 | 26 | 19 | 15 | 14 | 14 | 13 | 13 | 10 | 9 | 7 | 3 | 2 | 1 | | | | | | | | | | | | | | | | 1 |
| Ratio parts replaced to weapons | .034 | .037 | 0 | 0 | 0 | 0 | 0 | 0 | .077 | 0 | C | .111 | .143 | .333 | 0 | | | | | | | | | | | | | | | 0 | |

NOTE: Total rounds fired, 187,263

Table C-21
PARTS ATTRITION
(Replacement)
RPD MACHINEGUN

| Parts Replaced | Round Interval Between Parts Replacement | | | | | | | | | | | | | | | | | | | Total Each Type Part | |
|---|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----------------------|------------------|
| | 1 to 1000 | 1001 to 2000 | 2001 to 3000 | 3001 to 4000 | 4001 to 5000 | 5001 to 6000 | 6001 to 7000 | 7001 to 8000 | 8001 to 9000 | 9001 to 10,000 | 10,001 to 11,000 | 11,001 to 12,000 | 12,001 to 13,000 | 13,001 to 14,000 | 14,001 to 15,000 | 15,001 to 16,000 | 16,001 to 17,000 | 17,001 to 18,000 | 18,001 to 19,000 | | 19,001 to 20,000 |
| Guide spring | 1 | | | | | | | | | | | | | | | | | | | | 3 |
| Safety selector lever | | 1 | | | 1 | | | | | | | 1 | | | | 1 | | | | | 2 |
| Sear | | | | | | 1 | | | | | | | | | | 1 | | | | | 1 |
| Extractor | | | | | | | | 1 | | | | | | | | | | | | | 2 |
| Feed tray | | | | | | | | | | | | | | | | | | | | | 1 |
| Firing pin | 1 | | | | | | | | | | | | | | | | | | | | 1 |
| 1000 | 1 | 2 | | | 1 | | | 1 | | | | 1 | | | | 1 | | | | | 10 |
| Number weapons firing within round interval | | | | | | | | | | | | | | | | | | | | | |
| Ratio parts replaced to weapons | .125 | .250 | .125 | 0 | 0 | .200 | .200 | 0 | .250 | 0 | 0 | 0 | .250 | 0 | 0 | .250 | 0 | 1.000 | 0 | 0 | 0 |

NOTE: Total rounds fired, 88,853

DPM Machinegun

Three DPM machineguns firing 15,351, 11,919, and 13,569 rounds, respectively, for a total of 40,839 rounds, had no parts replaced.

Table C-22

FOULING TESTS, M16E1 RIFLES*

| Ammunition Lot Number | Date Tested | Weapon Serial Number | Rounds Fired | Previous Rounds Fired | Malfunctions Directly Attributed to Fouling | Secondary Malfunctions | Malfunctions per Weapon | Malfunctions per 1000 Rounds |
|-----------------------|------------------------|----------------------|--------------|-----------------------|---|----------------------------------|-------------------------|------------------------------|
| WCC 6098 (Ball) | 22 Oct 65 | 155298 | 1000 | 1007 | 3 Failure to extract | 1 DF | 4 | |
| | 10 Nov 65 | 151543 | 1000 | 698 | 0 | 1 FFR 3 EF 3 FBR 1 BOR | 8 | |
| | 10 Nov 65 | 147499 | 1000 | 736 | 1 Failure to extract | 6 FJ 1 DF | 9 | 5.6 |
| | 10 Nov 65 10 Nov 65 | 151467 150471 | 1000 1000 | 771 1271 | 0 0 | 1 FFR 2 FFR 2 BOR 3 FBR | 2 5 | |
| Total | N/A | N/A | 5000 | 4485 | 4 | 24 | 28 | N/A |

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| | | | | | | | | |
|------------------|-----------|--------|------|------|---|---------------|---|------|
| RA 5074 (IMR) | 9 Nov 65 | 155298 | 1000 | 2067 | 0 | 0 | 0 | |
| | 10 Nov 65 | 138133 | 1000 | 3003 | 0 | 1 FF 2 BOR | 3 | |
| | 10 Nov 65 | 150460 | 1000 | 777 | 0 | 2 FF | 2 | |
| | 10 Nov 65 | 152796 | 1000 | 683 | 0 | 0 | 0 | |
| | 10 Nov 65 | 152802 | 1000 | 885 | 0 | 0 | 0 | 0.91 |
| | 10 Nov 65 | 152031 | 1000 | 796 | 0 | 1 FF | 1 | |
| Total | 23 Nov 65 | 147499 | 1620 | 824 | 0 | 1 FFR | 1 | |
| | N/A | N/A | 7620 | 9035 | 0 | 7 | 7 | N/A |

* Fouling tests were conducted with sampling of M16E1 rifles using ball propellant and Improved Military Rifle (IMR) propellant. The tests were conducted in accordance with MIL-C-9963D, Appendix L. Weapons were prepared for testing in accordance with TM-1005-249-14, Change 3.

DF - Double feed
FF - Failure to feed
BOR - Bolt override

FBR - Failure of bolt to remain to rear after firing last round
FFR - Failure to fire
FJ - Failure to eject

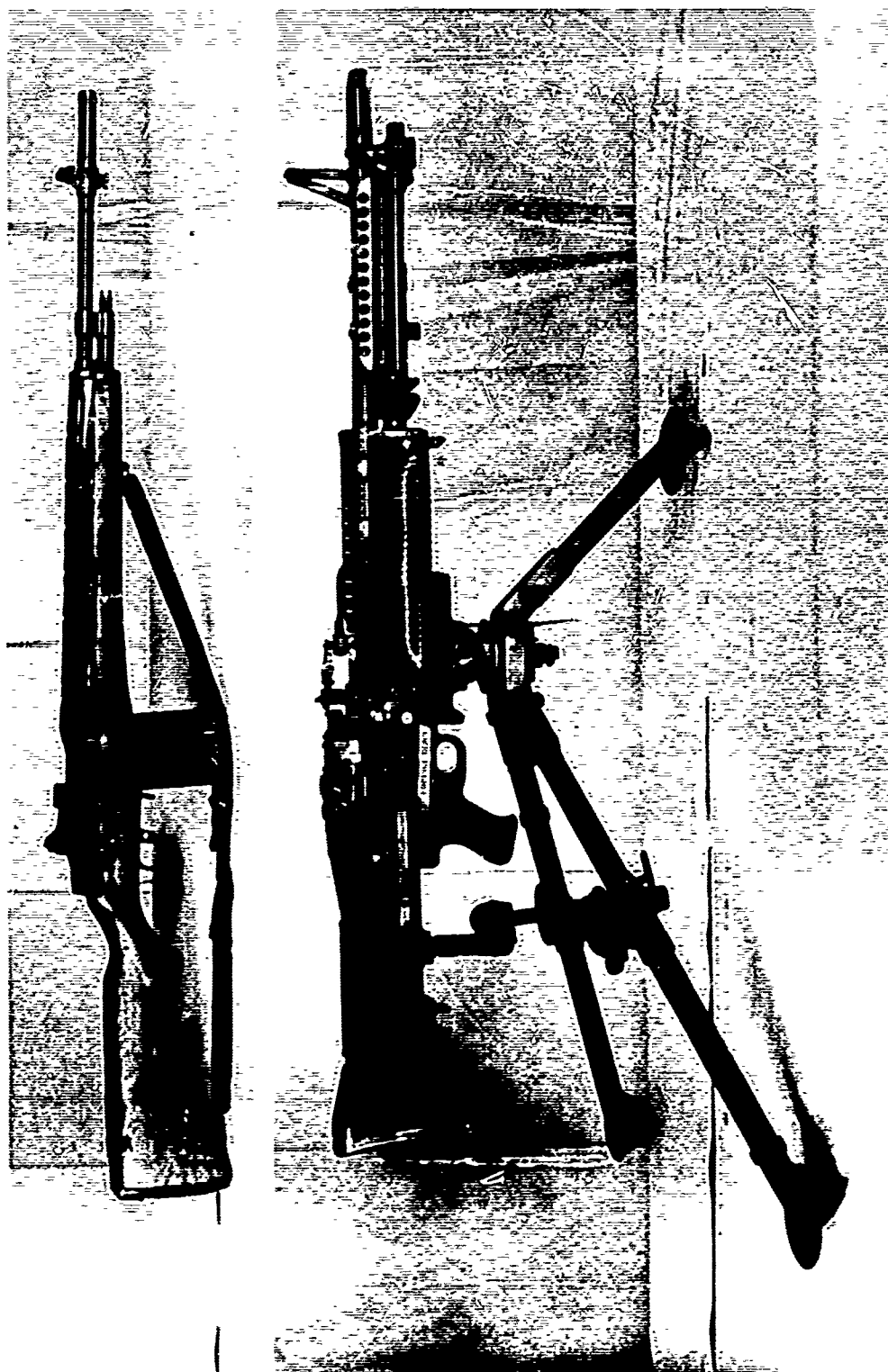


Figure C-1 US 7.62mm M14 RIFLE (top) AND M60 MACHINEGUN, TRIPOD MOUNTED (bottom)

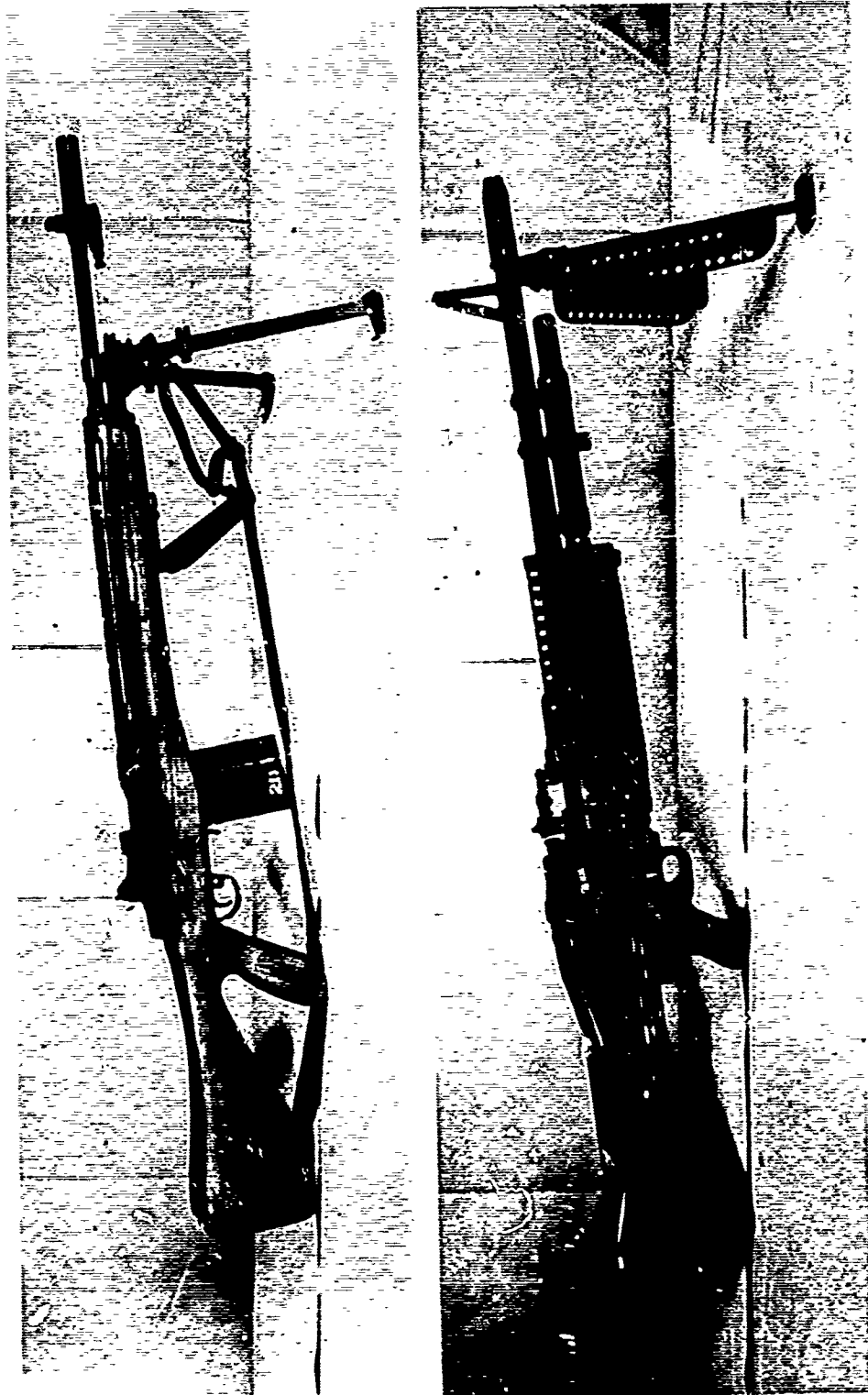


Figure C-2
US 7.62mm M14E2 AUTOMATIC RIFLE (top) AND M60 MACHINEGUN, BIPOD MOUNTED (bottom)

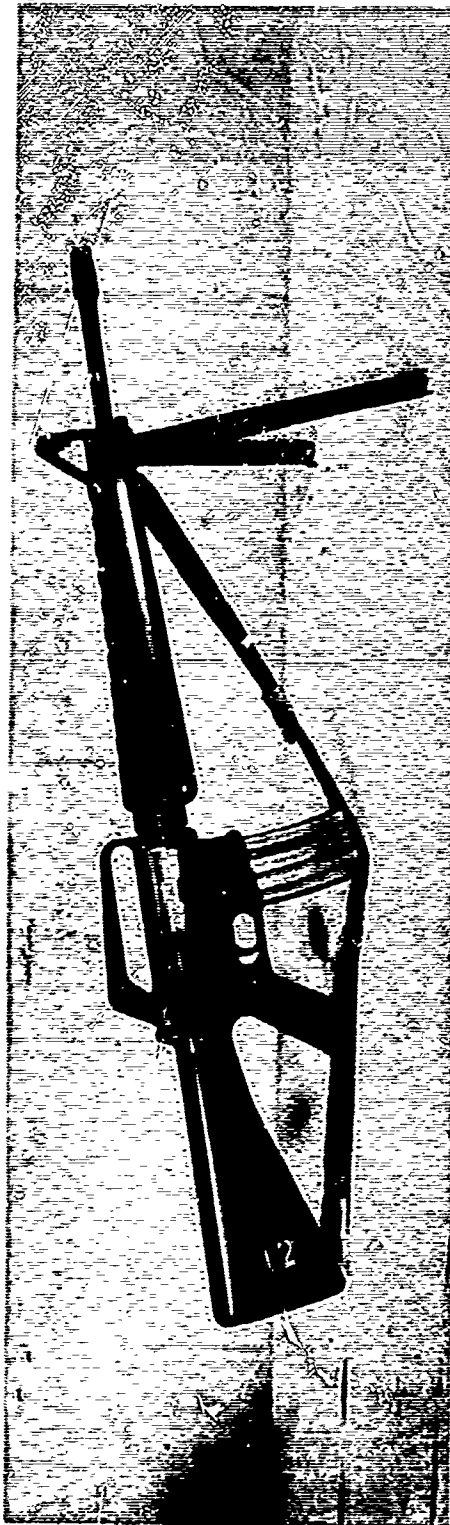


Figure C-3 COLT 5.56mm M16E1 RIFLE (top) AND AUTOMATIC RIFLE (bottom)



Figure C-4 STONER 63 5.56mm RIFLE (top) AND MACHINEGUN, TRIPOD MOUNTED (bottom)

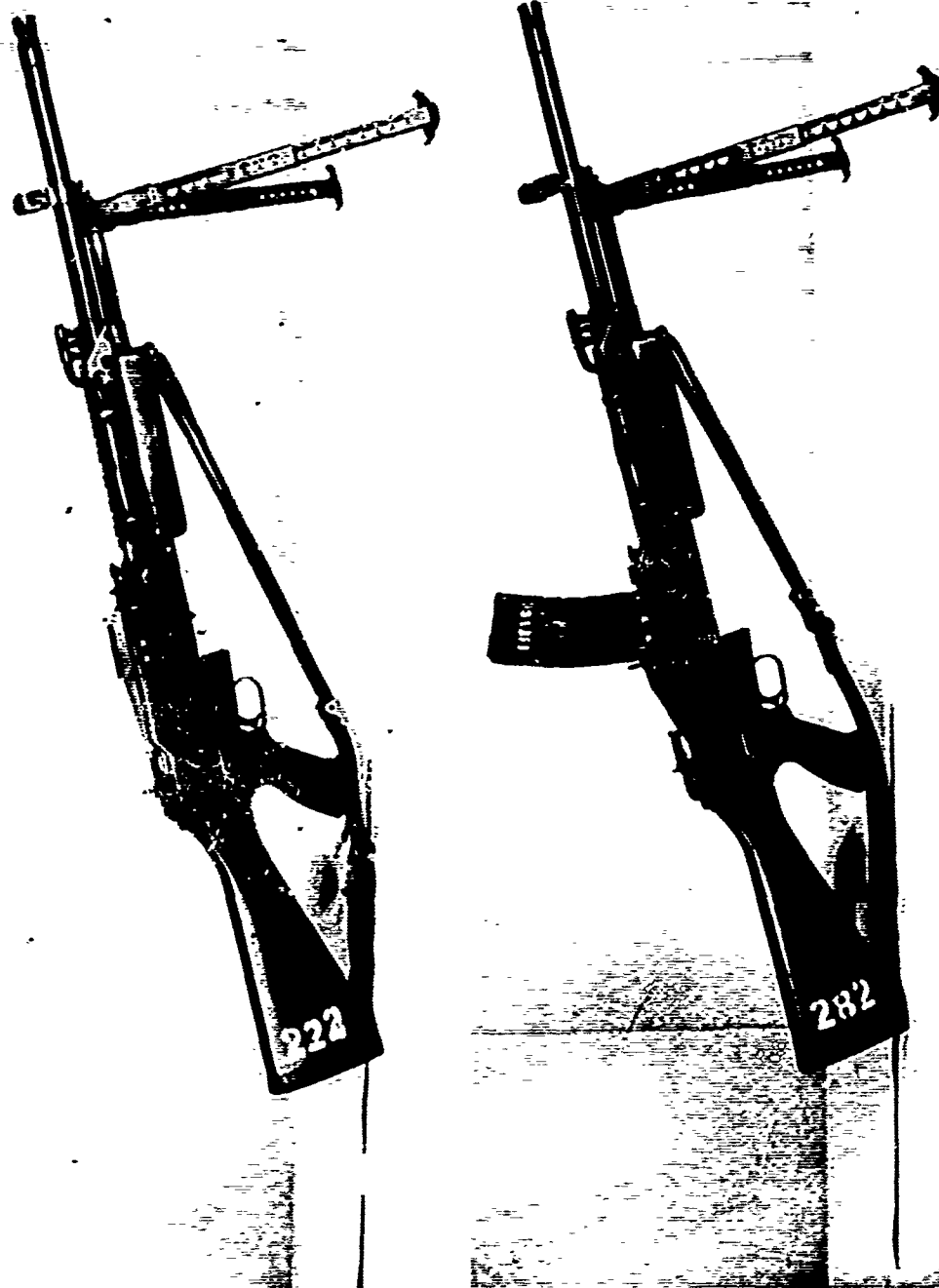


Figure C-5
STONER 63 5.56mm MACHINEGUN, BIPOD MOUNTED (top) AND AUTOMATIC RIFLE (bottom)

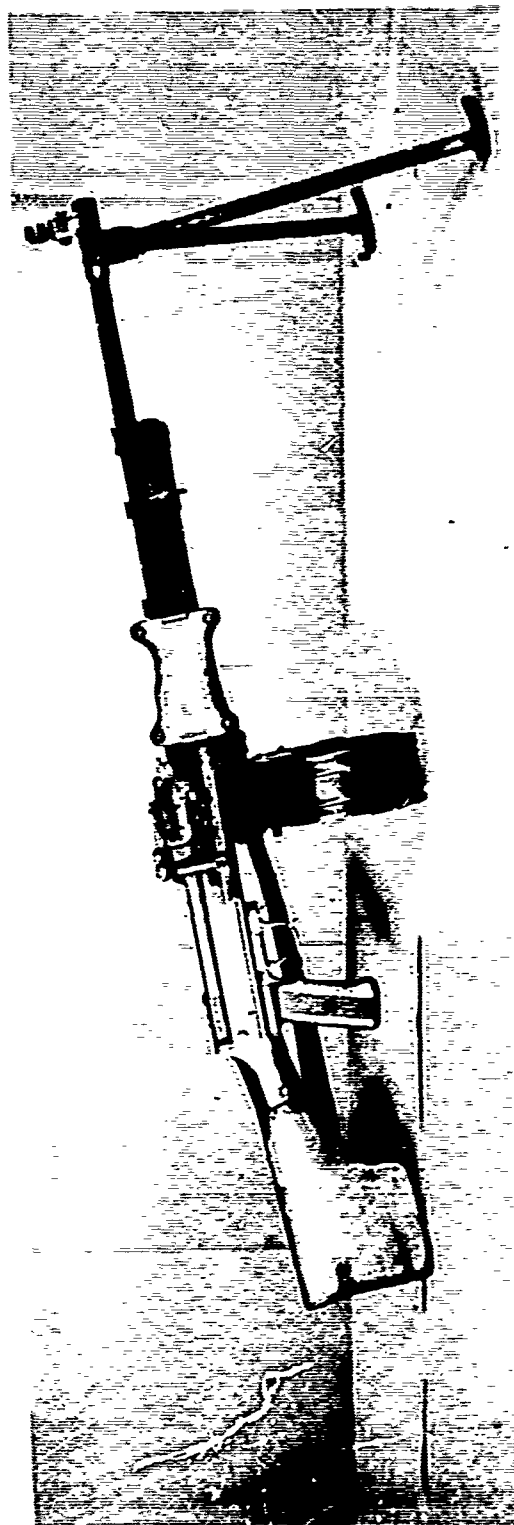


Figure C-6
SOVIET-TYPE 7.62mm AK47 RIFLE (top) AND RPD MACHINEGUN, BIPOD MOUNTED (bottom)



Figure C-7 SOVIET-TYPE 7.62mm DPM MACHINEGUN, BIPOD MOUNTED



Figure C-8 TRAILER GUN RACKS

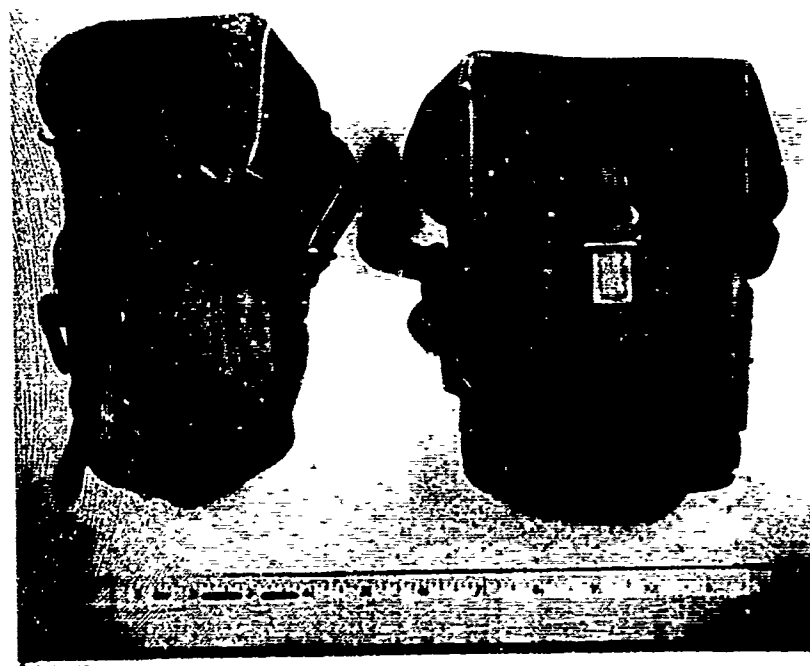
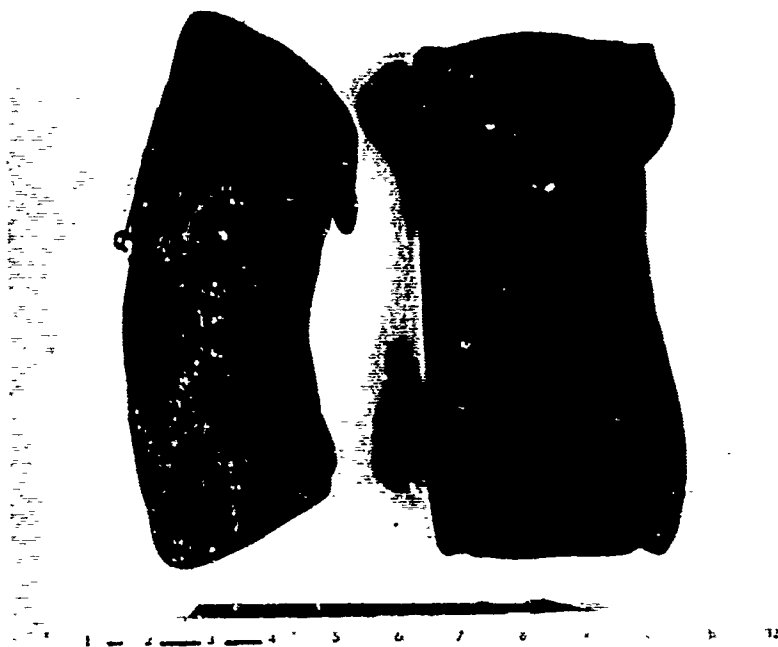


Figure C-9 RIFLE AMMUNITION POUCHES:
AK47 (top) AND COLT AND STONER (bottom)

Annex D

CORRELATION ANALYSIS

Annex D

CORRELATION ANALYSIS

A correlation analysis was run on measures of effectiveness, both primary and collateral, to determine the extent of the relationship between the measures and to gain further understanding of the nature of these relationships. The correlations for each situation are presented in Tables D-1 through D-9. Other measures, also presented in the tables, were generated to see if measures other than those used to evaluate the squad mixes could be used. The correlation formula employed was

$$\text{Correlation coefficient } r = \frac{\sum x_i y_i - \frac{1}{n} \sum x_i \sum y_i}{\left[\left\{ \sum x_i^2 - \frac{1}{n} (\sum x_i)^2 \right\} \left\{ \sum y_i^2 - \frac{1}{n} (\sum y_i)^2 \right\} \right]^{1/2}}$$

In the tables the following keys to effectiveness measures are used:

- | | |
|------------|---|
| 1 Tot H | Total hits on target |
| 2 TH | Number of targets hit |
| 3 CET | Cumulative exposure time |
| 4 CET/PCET | Cumulative exposure time and programmed exposure time ratio |
| 5 RF | Rounds fired |
| 6 PAU | Percent ammunition used |
| 7 TH/PAU | Number of targets hit and percent ammunition used ratio |
| 8 NM | Number of near misses |
| 9 NM/PAU | Number of near misses and percent ammunition used ratio |

Table D-1
CORRELATED EFFECTIVENESS MEASURES
Situation 1, Rifle Squad in Line Assault

| Effectiveness Measures | Tot H 1 | TH 2 | CET 3 | CET/ PCET 4 | RF 5 | PAU 6 | TH/ PAU 7 | NM 8 |
|------------------------|------------|---------|----------|-------------------|---------|----------|-----------------|---------|
| 1 Tot H | | | | | | | | |
| 2 TH | 0.9667 | | | | | | | |
| 3 CET | -0.4392 | -0.5087 | | | | | | |
| 4 CET/PCET | -0.6614 | -0.6985 | 0.6485 | | | | | |
| 5 RF | 0.1499 | 0.0912 | 0.1290 | -0.0384 | | | | |
| 6 PAU | -0.0934 | -0.0970 | 0.2228 | 0.0593 | 0.0832 | | | |
| 7 TH/PAU | 0.7530 | 0.7722 | -0.5084 | -0.5596 | 0.0348 | -0.5903 | | |
| 8 NM | 0.3497 | 0.3232 | -0.0572 | -0.2247 | 0.8113 | -0.0221 | 0.2606 | |
| 9 NM/PAU | 0.1683 | 0.1602 | -0.1682 | -0.0901 | 0.3686 | -0.7591 | 0.5907 | 0.5687 |

Table D-2
CORRELATED EFFECTIVENESS MEASURES
Situation 2, Rifle Squad as Base of Fire Supporting the Assault

| Effectiveness Measures | Tot H 1 | TH 2 | CET 3 | CET/ PCET 4 | RF 5 | PAU 6 | TH/ PAU 7 | NM 8 |
|------------------------|------------|---------|----------|-------------------|---------|----------|-----------------|---------|
| 1 Tot H | | | | | | | | |
| 2 TH | 0.9626 | | | | | | | |
| 3 CET | -0.7957 | -0.8431 | | | | | | |
| 4 CET/PCET | -0.7924 | -0.8399 | 1.0000 | | | | | |
| 5 RF | 0.0117 | 0.0820 | -0.0963 | -0.0936 | | | | |
| 6 PAU | 0.1306 | 0.1086 | -0.0758 | -0.0759 | -0.2401 | | | |
| 7 TH/PAU | 0.6580 | 0.7097 | -0.5852 | -0.5826 | 0.2268 | -0.5597 | | |
| 8 NM | 0.3786 | 0.4298 | -0.3964 | -0.3933 | 0.3718 | 0.2279 | 0.2566 | |
| 9 NM/PAU | 0.1866 | 0.2388 | -0.3263 | -0.2240 | 0.4507 | -0.5726 | 0.6542 | 0.6365 |

Table D-3
CORRELATED EFFECTIVENESS MEASURES
Situation 4, Rifle Squad in Approach to Contact

| Effectiveness Measures | Tot H 1 | TH 2 | CET 3 | CET/ PCET 4 | RF 5 | PAU 6 | TH/ PAU 7 | NM 8 |
|------------------------|------------|---------|----------|-------------------|---------|----------|-----------------|---------|
| 1 Tot H | | | | | | | | |
| 2 TH | 0.6398 | | | | | | | |
| 3 CET | -0.4465 | -0.6566 | | | | | | |
| 4 CET/PCET | -0.4466 | -0.6569 | 1.0000 | | | | | |
| 5 RF | 0.1583 | -0.0176 | -0.1804 | -0.1806 | | | | |
| 6 PAU | -0.2400 | -0.2557 | 0.1538 | 0.1548 | 0.4574 | | | |
| 7 TH/PAU | 0.2285 | 0.3454 | -0.1684 | -0.1690 | -0.4099 | -0.8981 | | |

Table D-4
CORRELATED EFFECTIVENESS MEASURES
Situation 3, Machinegun Squad in Fire Support of the Assault
(Stoner MGs not included)

| Effectiveness Measures | Tot H 1 | TH 2 | CET 3 | CET/ PCET 4 | RF 5 | PAU 6 | TH/ PAU 7 | NM 8 |
|------------------------|------------|---------|----------|-------------------|---------|----------|-----------------|---------|
| 1 Tot H | | | | | | | | |
| 2 TH | 0.9282 | | | | | | | |
| 3 CET | -0.7727 | -0.8311 | | | | | | |
| 4 CET/PCET | -0.7722 | -0.8303 | 1.0000 | | | | | |
| 5 RF | 0.3512 | 0.4306 | -0.3454 | -0.3454 | | | | |
| 6 PAU | 0.3536 | 0.3302 | -0.4143 | -0.4140 | 0.1788 | | | |
| 7 TH/PAU | 0.7104 | 0.7936 | -0.5835 | -0.5827 | 0.4185 | -0.2767 | | |
| 8 NM | 0.5423 | 0.5239 | -0.6086 | -0.6105 | 0.6438 | 0.4405 | 0.2749 | |
| 9 NM/PAU | 0.1819 | 0.2012 | -0.2157 | -0.2181 | 0.5316 | -0.4663 | 0.5173 | 0.5564 |

Table D-5
CORRELATED EFFECTIVENESS MEASURES
Situation 5, Rifle Squad as Base of Fire Supporting the Advance

| Effectiveness Measures | Tot H 1 | TH 2 | CET 3 | CET/ PCET 4 | RF 5 | PAU 6 | TH/ PAU 7 | NM 8 |
|------------------------|------------|---------|----------|-------------------|---------|----------|-----------------|---------|
| 1 Tot H | | | | | | | | |
| 2 TH | 0.9755 | | | | | | | |
| 3 CET | -0.8322 | -0.8425 | | | | | | |
| 4 CET/PCET | -0.8325 | -0.8426 | 1.0000 | | | | | |
| 5 RF | 0.3017 | 0.3039 | -0.2492 | -0.2501 | | | | |
| 6 PAU | -0.1295 | -0.0970 | 0.0267 | 0.0268 | 0.2437 | | | |
| 7 TH/PAU | 0.7235 | 0.7229 | -0.5514 | -0.5513 | 0.0099 | -0.6316 | | |
| 8 NM | 0.6424 | 0.6171 | -0.5782 | -0.5787 | 0.3420 | -0.1045 | 0.4062 | |
| 9 NM/PAU | 0.3736 | 0.3341 | -0.2873 | -0.2874 | -0.0834 | -0.7786 | 0.6946 | 0.5880 |

Table D-6
CORRELATED EFFECTIVENESS MEASURES
Situation 6, Machinegun Squad in Support of the Advance
(Stoner machineguns not included)

| Effectiveness Measures | Tot H 1 | TH 2 | CET 3 | CET/ PCET 4 | RF 5 | PAU 6 | TH/ PAU 7 | NM 8 |
|------------------------|------------|---------|----------|-------------------|---------|----------|-----------------|---------|
| 1 Tot H | | | | | | | | |
| 2 TH | 0.9662 | | | | | | | |
| 3 CET | -0.9043 | -0.9404 | | | | | | |
| 4 CET/PCET | -0.9048 | -0.9406 | 1.0000 | | | | | |
| 5 RF | 0.4278 | 0.4927 | -0.5578 | -0.5578 | | | | |
| 6 PAU | 0.4469 | 0.5049 | -0.5750 | -0.5762 | 0.9009 | | | |
| 7 TH/PAU | 0.3525 | 0.3739 | -0.2445 | -0.2435 | -0.3594 | -0.5003 | | |
| 8 NM | 0.8673 | 0.8482 | -0.8302 | -0.8300 | 0.6359 | 0.5737 | 0.0891 | |
| 9 NM/PAU | 0.3746 | 0.3582 | -0.2627 | -0.2609 | -0.3030 | -0.5253 | 0.9127 | 0.2547 |

Table D-7
CORRELATED EFFECTIVENESS MEASURES
Situation 7, Rifle Squad in Defense Against Attack

| Effectiveness Measures | Tot H 1 | TH 2 | CET 3 | CET/ PCET 4 | RF 5 | PAU 6 |
|------------------------|------------|---------|----------|-------------------|---------|----------|
| 1 Tot H | | | | | | |
| 2 TH | 0.7570 | | | | | |
| 3 CET | -0.6387 | -0.8119 | | | | |
| 4 CET/PCET | -0.6381 | -0.8071 | 1.0000 | | | |
| 5 RF | -0.0316 | -0.0039 | 0.1833 | 0.1831 | | |
| 6 PAU | 0.0286 | -0.0899 | 0.2880 | 0.2917 | 0.5962 | |
| 7 TH/PAU | 0.1020 | 0.2819 | -0.4491 | -0.4524 | -0.3743 | -0.8950 |

Table D-8
CORRELATED EFFECTIVENESS MEASURES
Situation 8, Rifle Squad in Night Defense Against Attack

| Effectiveness Measures | Tot H 1 | TH 2 | CET 3 | CET/ PCET 4 | RF 5 | PAU 6 |
|------------------------|------------|---------|----------|-------------------|---------|----------|
| 1 Tot H | | | | | | |
| 2 TH | 0.8557 | | | | | |
| 3 CET | -0.7932 | -0.8537 | | | | |
| 4 CET/PCET | -0.7935 | -0.8539 | 1.0000 | | | |
| 5 RF | 0.4258 | 0.2788 | -0.2862 | -0.2864 | | |
| 6 PAU | -0.4211 | -0.3855 | 0.4014 | 0.4024 | -0.0091 | |
| 7 TH/PAU | 0.7146 | 0.7253 | -0.6592 | -0.6598 | 0.2426 | -0.8450 |

Table D-9
CORRELATED EFFECTIVENESS MEASURES
Situation 9, Machinegun Squad in Fire Support of the Assault
(Minus Stoner machineguns)

| Effectiveness Measures | Tot H 1 | TH 2 | CET 3 | CET/ PCET 4 | RF 5 | PAU 6 |
|------------------------|------------|---------|----------|-------------------|---------|----------|
| 1 T t H | | | | | | |
| 2 TH | 0.8002 | | | | | |
| 3 CET | -0.6957 | -0.8562 | | | | |
| 4 CET/PCET | -0.6953 | -0.8563 | 1.0000 | | | |
| 5 RF | 0.3065 | 0.4069 | -0.1824 | -0.1823 | | |
| 6 PAU | 0.1590 | 0.3539 | -0.1557 | -0.1559 | 0.9290 | |
| 7 TH/PAU | 0.0568 | -0.1345 | -0.0566 | -0.0564 | -0.7073 | -0.8300 |

Annex E

SMALL ARMS LETHALITY

Annex E

SMALL ARMS LETHALITY

Annex E is classified CONFIDENTIAL. It will be provided separately on request if there is a need-to-know. This annex should be requested under its full title: "Small Arms Lethality: A Review of Selected Casualty Studies and Reports on Experimental Wounds Analysis (U)."

Annex F

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Annex F

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